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HOLY LOCH FLEET MOORINGS INSPECTION REPORT

15 OCTOBER 1982

OCEAN ENGINEERING AND CONSTRUCTION PROJECT OFFICE CHESAPEAKE DIVISION NAVAL FACILITIES ENGINEERING COMMAND WASHINGTON, DC 20374

FPO-1-82(22)

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Abstract

This report contains results of the inspection of selected Fleet Moorings and Navigation Buoys at the Naval Activity Detachment, Holy Loch, Scotland. Divers from UCT-1 and an engineer from the Ocean Engineering and Construction Project Office of CHESNAVFACENGCOM conducted the inspections from 17 - 25 June 1982.

Results of the inspection indicate that a majority of the ground legs in the AFDB-7 mooring may be in need of overhaul, and that a number of legs should be repositioned in order to improve the catenary of the mooring chains. The condition of the two Sixth Class moorings and the two Navigation Buoys is satisfactory. Comments concerning the condition of specific components and any recommendations for remedial action are included.

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1.0 INTRODUCTION

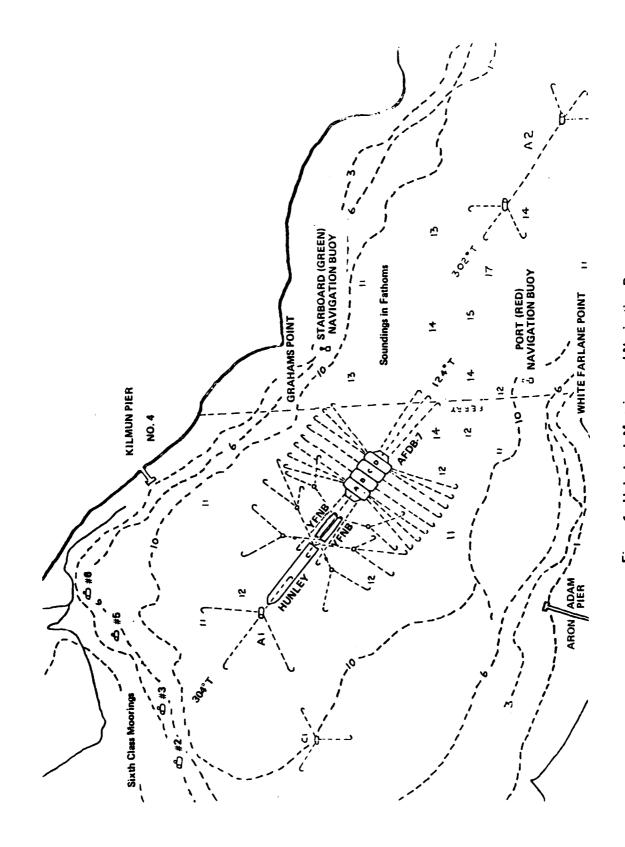
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- 1.1 <u>Background.</u> In November 1981, CINCUSNAVEUR requested that COMCBLANT provide UCT-1 divers to inspect six legs of the AFDB-7 mooring, the Number 2 and Number 3 Sixth Class moorings, and the Port and Starboard Navigation Buoys at Holy Loch (Ref. A, Annex F); in May 1982 this request was expanded to include all 22 ground legs of AFDB-7 (Ref. B). In turn, on 26 March 1982, COMCBLANT stated that CHESNAVFACENGCOM would provide funding and technical support for the inspection (Ref. C). The funding for UCT-1 participation was provided by CHESNAVFACENGCOM fromthe NAVFACENG-COM (Code 10) sponsored Fleet Mooring Maintenance Program. References D and E provide additional background information. Technical support included inspection planning, development of diver inspection procedures, on-site engineering support, recording of the raw data gathered by divers, data analysis, and preparation of the inspection report. Inspections were conducted from 18 24 June; local debriefings were conducted on 25 and 28 June. Preliminary results of the inspection and initial recommendations for corrective action were reported by message on July 29 (Ref. F). Annex E contains a chronology of significant events.
- 1.2 <u>General Description and Historical Information.</u> Holy Loch is located on the west coast of Scotland about 35 miles west-northwest of Glasgow. Access to Holy Loch from the Atlantic Ocean is via the Irish Sea and the Firth of Clyde. There are 10 moorings located in the northwest end of the Loch; Figure 1 shows the position of each mooring.
- 1.2.1 <u>AFDB-7.</u> The AFDB-7 mooring is a Special Floating Dry Dock mooring consisting of four dock cells which are connected together and moored in place by 22 ground legs and anchors. The dock is 513 feet long and 241 feet wide. Each leg of three-inch diameter studlink chain runs from a padeye on deck to a 30,000 pound anchor (stockless without stabilizer type). AFDB-7 was originally installed in 1961 at a position to the southeast of its present location; movement of the dock to the current location was completed on 5 August 1971.

The dry dock is routinely used by fleet ballistic missile (FBM) submarines. Because of the strategic importance of this facility and the possibility of severe winter weather, the material condition of the mooring is a continuing concern. Between 1973 and 1981, 19 of the 22 ground legs were inspected by the British Ministry of Defense (M.O.D.). During this period, only one of the ground legs was determined to contain a chain link which has worn to less than 80% of the original wire diameter; the length which contained this link was replaced in 1981. In April 1982, divers from USS HUNLEY (AS-31) visually inspected 21 of the 22 ground legs. All chain was reported to be in good condition, although some legs were observed to have little or no catenary.

A schematic diagram of the AFDB-7 mooring is shown in Figure 2.



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Figure 1. Holy Loch Moorings and Navigation Buoys

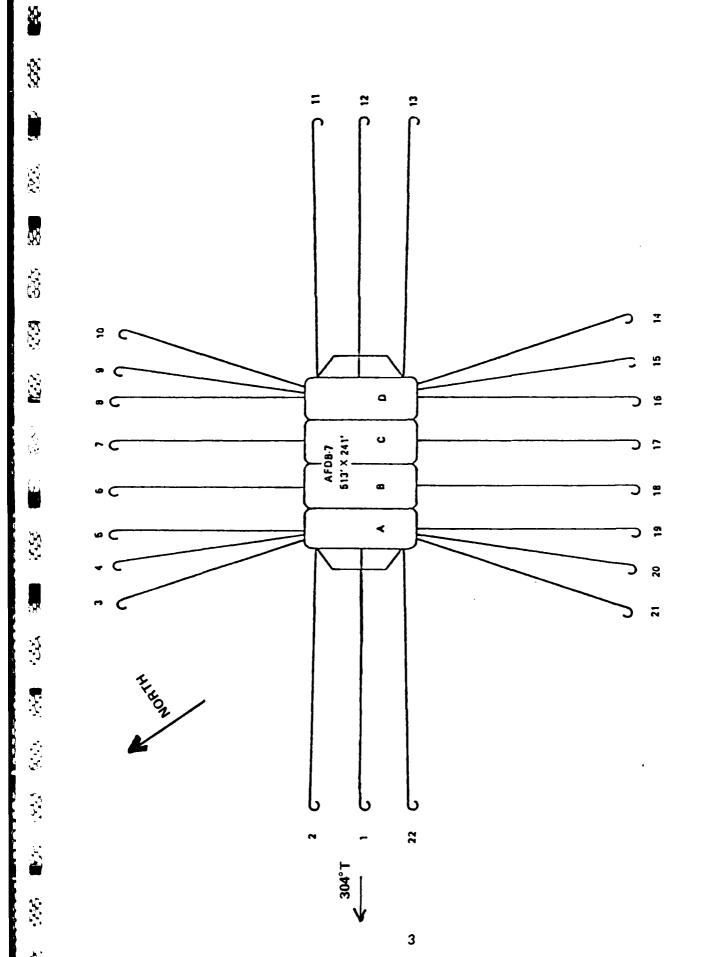


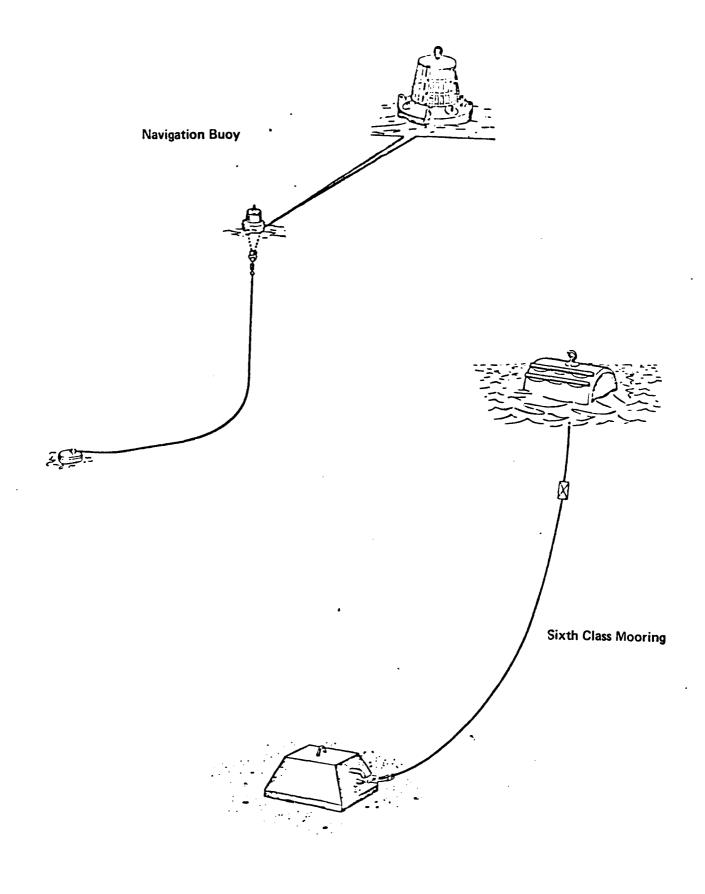
Figure 2. Schematic of AFDB-7 Mooring, Showing Ground Leg Numbers

- 1.2.2 <u>Sixth Class Moorings.</u> "Sixth Class" is the British designation for the single-anchor/single riser type of mooring illustrated in Figure 3. A row of such moorings is located along the northwest margin of the Loch (see Figure 1). Records indicated that six moorings were in place; Numbers 2 and 3 were to be inspected. Upon arrival the inspection team learned that buoys Number 1 and 4 had been removed. The remaining moorings are regularly used by small barges and maintenance vessels.
- 1.2.3 <u>Navigation Buoys.</u> These special purpose Navigation Buoys (Figure 3) are used by maintenance vessels and FBM submarines as they transit to or from the Holy Loch dry dock. Buoy positions are shown in Figure 1.

2.0 INSPECTION PROCEDURES

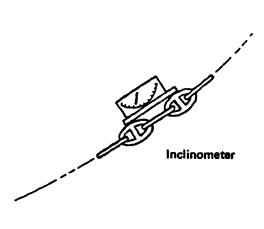
The purpose of the inspection was to determine the general physical condition of the moorings and buoys, and, when possible, to verify or update existing installation and maintenance records. The underwater inspections performed by divers sampled only a small portion of the submerged chain links and jewelry in order to compile a general description of the installation's condition. If accurate records of original material and configuration (such as wire diameter) or subsequent maintenance (e.g., replacement of chain links) are not available, then the measurements made by divers may not reveal components which have badly deteriorated or are sub-standard. Conversely, the existence of fairly consistent measurements during a "selective sampling"-type inspection is a good indication of the installation's overall condition. It should be kept in mind that underwater inspections are intended as a relatively quick and inexpensive supplement to, and augmentation of, accurate maintenance records. As such, they cannot fully substitute for a complete inspection involving removal of the mooring from the water, and the measurement and evaluation of each component.

The most important parameter used to evaluate the condition of a mooring is chain wire diameter. After cleaning to bare metal, a selective sampling of the wire diameter of chain links and connecting hardware is taken in order to determine the amount of corrosion and wear. "Single Link" measurements are taken where chain is slack, and detect only corrosion loss. "Double Link" measurements, taken where two links connect under tension, detect the combined effects of corrosion and wear. Figure 4 shows how these measurements are made. Chain links and other components which measure greater than 90% (+90%) of original wire diameter are considered satisfactory; measurement between 80% and 90% (+80%) of original diameter is cause for the mooring classification to be downgraded; any measurement of less than 80% (-80%) causes the mooring to be considered unsatisfactory for fleet use.



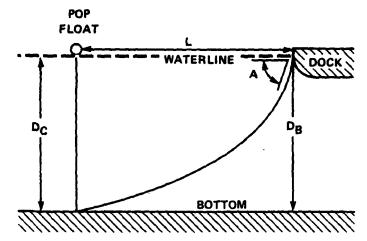
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Figure 3. Schematics of Navigation Buoy and Sixth Class Mooring



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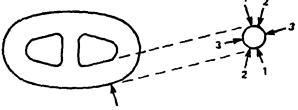
Catenary Data

L = Lateral Distance

A = Inclinometer Angle

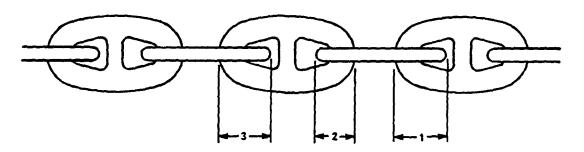
D_C = Depth Where Chain Enters Mud

DB = Depth Below Deck Edge



CHAIN WIRE DIAMETER MEASUREMENTS

SINGLE LINK MEASUREMENT



DOUBLE LINK MEASUREMENT

Figure 4. Chain Wire Diameter Measurements and Ground Leg Catenary Observations

Standard underwater inspection procedures do not call for the inspection of any part of the mooring which has been buried. Ground legs and risers were observed only to the point at which they become buried; no attempt was made to locate and inspect anchors or other mooring materials which were not readily visible.

2.1 AFDB-7

2.1.1 <u>Physical Condition of Ground Legs.</u> For inspection purposes, sections of each of the 22 ground legs were defined as follows:

Section I: On-deck, from padeye to chock

Section II: Splash zone, from chock to waterline

Section III: From waterline to mudline

Inspection of Section I involved selective sampling of double link measurements, a visual check of the general condition of all links, and a visual check for wear at the padeye and pelican hook. A "Go/No-Go" technique was used for measurements in this section: by using a pre-cut gauge, each connection point was graded as +90%, +80%, or -80% without requiring a caliper measurement.

Section II was inspected by taking double link caliper measurements of all links and noting their general condition.

For Section III the inspection included a visual check of the chain from surface to the mud line and "Go/No-Go" double link measurements every 20 feet of water depth. Single link measurements were made on short sections of Legs #15 and #19 which were lifted from the mud. (Note: lifts were made using cranes aboard AFDB-7; not more than 6 - 8 links were lifted in order to avoid disturbing the anchor.)

- 2.1.2 Cathodic Protection. None of the ground legs is equipped with a cathodic protection system per se. However, voltmeter readings were taken concurrent with the double link measurements in Section III of Legs #1 and 13-22 in order to determine to what degree, if any, the impressed current systems of nearby vessels may be providing cathodic protection for the ground legs. Voltmeter readings are consolidated in Table 2.
- 2.1.3 <u>Catenary Profile.</u> Several observations were made in order to determine the catenary of each leg. The parameters involved are illustrated in Figure 4. The inclinometer readings were taken where the chain enters the water; depth readings were taken directly below the deck edge and where the chain enters the

mud; the lateral distance is the horizontal distance from the deck edge to the pop float installed above the position where the chain enters the mud. Two inclinometer readings were taken on several legs: the first under relatively calm conditions (winds less than 10 KTS), and a second during strong winds (to 40 KTS) in order to compare the effect on the catenary.

- 2.1.4 Ground Leg Relative Bearing. The orientation of each leg relative to the dock was observed by using a hand-held compass to determine the bearing of the chain as it enters the water. For some legs, a second bearing was taken on a pop float above the point where the chain entered the bottom mud. Comparison of observed vs. designed orientation may indicate which ground legs, if any, should be repositioned.
- 2.1.5 <u>Motion of AFDB-7</u>. From known positions ashore, transit readings to prominent features on the dry dock were recorded under various wind conditions in order to determine the extent of movement of the dock. A schematic diagram of the surveying arrangement is shown in Annex A.

The results of these inspections are presented in Annex A.

2.2 <u>Sixth Class Moorings</u>. Two moorings of this type were inspected by divers. The inspection of each mooring included checking the overall physical condition of the buoy itself, observing the thickness of marine growth, and inspecting the condition of the paint under the growth. *Go/No-Go double link measurements* of the riser chain wire diameter were made at three points along its length.

Results are presented in Annex B.

2.3 <u>Navigation Buoys.</u> Inspection of the Navigation Buoys was similar to that of the Sixth Class moorings. In addition, transit readings were taken from shore to verify the location of each buoy.

Annex C contains the results of these inspections.

3.0 INSPECTION SUMMARY

This summary provides a brief analysis of the results of the inspection and provides recommendations for corrective action if needed. A more detailed presentation of data can be found in the appropriate annex.

3.1 AFDB-7-Summary

- 3.1.1 <u>Findings.</u> A summary of inspection data is presented in Table 1. Analysis of the observations and measurements made by the inspection team yielded the following results:
 - No broken links or hardware were found; 27% (6 of 22) legs were +90% of original 3" chain wire diameter over the entire inspected length (to mudline); 68% (15 of 22) were +80% at some point along their length; one leg (#22) was -80% in Section II. All but one of the +80% or lower measurements occured in Section II, the splash zone (see Figure 5). Leg #18 had no on-deck stopper (pelican hook).
 - No anchors or sinkers were located; all legs were buried in bottom mud a relatively short distance from the floating dock.
 - Three legs were noted to have slack chain resting on the bottom; 36% (8 of 22) of the legs had surface chain angles of greater than 85° from the horizontal; 41% (9 of 22) had angles of 75° 85°; 32% (7 of 22) of the lateral distances were less than 18'; average lateral distance was 45' (see Figure 6).
 - Voltmeter readings are typical of unprotected steel in seawater, indicating that no cathodic protection is being provided via impressed current from vessels in the vicinity (see Table 2).
 - Analysis of transit readings indicates that wind-induced movement of AFDB-7 is not extreme.
 For steady winds of 30 KTS with gusts to 40 KTS, the dock experienced a net lateral displacement of approximately 32' from its position in light winds (<10 KTS) from approximately the same direction; maximum displacement was 37' at the bow during a yaw of about 2° to port; maximum yaw was about 3° to starboard.
 - Because of inherent inaccuracies in the observation system, no firm conclusions can be drawn regarding the relative bearing of the ground legs.

3.1.2 Proposed Corrective Action

- The chain in Section II of Leg #22 which measured less than 80% of original wire diameter must be replaced as soon as possible.
- An engineering analysis of AFDB-7 mooring design should be conducted in order to define the optimum catenary of each leg; pending results of such an analysis, a number of legs should be repositioned to tighten the catenary prior to the 82 83 winter season.

	MOORING	INSPECTION REPORT		
1. FACILITY	2. MOORING NO.	3. TYPE/CLASS MOORING		
NAVACTDET HOLY LOCH, UK	AFDB-7	Special Dry Dock	LON:	
2112	/ERS	WATER DEPTH	ENGINEER	INITIALS
5. INSPECTION 18-24JUN82			M. M. Walter	

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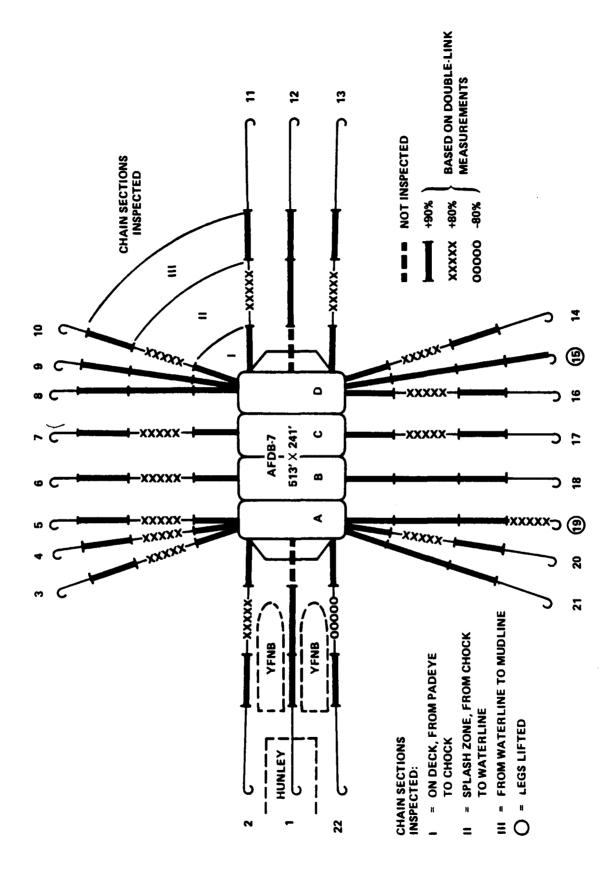
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LEG		ONDIT		D		1	C	INCLINOMETER	RELATIVE BEAR-	LATERAL DIS-
#\	I	II	III	Obs.	MLWS	Obs.	MLWS	ANGLE (Note 2)	ING (Note 3)	tance(Note4)
1	+90%	+80%	+90%	95	84.6	95	84.6	80o	000°	Not observed
2	+90%	+80%	+90%	104	94.8	96	96.8	59° / 62°	010°	(90)
3	+90%	+80%	+90%	108	99.3	107	98.3	78° / 71°	061°	(60)
4	+90%	+80%	+90%	108	100.6	105	97.6	870 / 770	050 ^o	45
5	+90%	+80%	+90%	109	102.1	109	102.1	89° / 86°	100°	(3)
6	+90%	+80%	+90%	111	104.4	109	102.4	82° / 65°	070 ^o	54
7	+90%	+80%	+90%	95	89.3	95	89.3	770 / 55 ⁰	070 ⁰	(60)
8	+90%	+90%	+90%	88	83	92	87	66° / 33°	080°	120
9	+90%	+90%	+90%	88	84.4	86	82.4	85°	090° / 120°	57
10	+90%	+80%	+90%	88	84.6	85	81.6	78 ⁰	120° / 160°	54
11	+90%	+80%	+90%	81	78.9	85	82.9	59° / 43° /61°	180°	88
12	+90%	+90%	+90%	90	77.5	90	77.5	75°	180°	60
13	+90%	+80%	+90%	90	80.3	90	80.3	790	175° / 170°	39
14	+90%	+80%	+90%	89	80	93	80	74 ⁰	220° / 235°	54
15	+90%	+90%	+90%	87	79.2	89	79.2	910	230°	03
16	+90%	+80%	+90%	87	74.7	89	74.7	84 ⁰	195° / 225°	33
17	+90%	+80%	+90%	85	75.6	88	78.6	83 ⁰	185° / 220°	39
18	+90%	+90%	+90%	84	77.4	84	77.4	87 ⁰	205° / 220°	18
19	+90%	+90%	+80%	88	76.5	88	78.5	88°	285 ⁰	00
20	+90%	+80%	+90%	88	78.3	88	82.3	92 ⁰	285° / 305°	12
21	+90%	+90%	+90%	88	79.3	88	79.3	85°	290° / 300°	03
22	+90%	-80%	+90%	85	79.6	85	79.6	65 ⁰	000° / 353°	57

- Note 1: D_B = Depth at dock edge; D_C = Depth where chain enters mud; Obs. = actual measurement; MLWS = Depth at Mean Low Water Springs
- Note 2: Second and third angles measured during different weather conditions; see text.
- Note 3: First observation taken along chain as it enters water; second observation, if recorded, was from deck edge to pop float above point where chain enters mud.
- Note 4: Unable to measure Leg #1 due to proximity of other vessels; values in parentheses are from inspection performed in April 1982 by divers from USS HUNLEY.

Table 1. Summary of AFDB-7 Inspection Data



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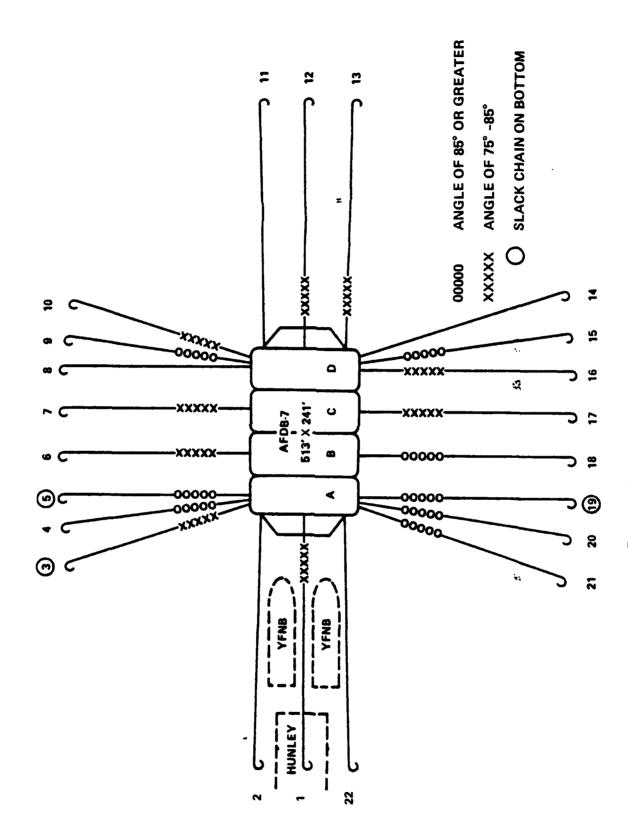
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Figure 5. Summary of Ground Leg Chain Measurements



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Figure 6. Summary of Catenary Data

	FACILITY NAVACTDET	HOLY LOCH	UK	MOOF AFDB-	ing N	0 3. SI	PECIA	CLAS	S MOC	CK		LON	: I:			
5	. INSPECTION	18-24JUN8	DIVER	1 5				WA	TER C	EPTH	ENG	INEE M.M	R WAL	TER	INITIA	LS
33 33 33																
222																MEASUREMENTS
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ď	READINGS*		рертн 40	607	670	677	669	672	899	675	999	651	658	999	Voltmeter Readings	
			WATER DE	649	299	629	689	684	929	629	629	663	999	670		
27	*VOLIMETER							·				w	v	Ψ	. AFDB-7	
	*		80,	664	663	899	681	681	675	675	682	664	667	663	Table 2.	
			# Dari		13	14	15	16	17	18	19	20	21	22		
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<u>.</u>	•	•					13									

3.2 Sixth Class Moorings - Summary

- 3.2.1 <u>Findings</u>. The two moorings inspected are in generally good-to-excellent condition. Inspection of the buoys revealed no holes, dents, or pitting, and only medium marine growth was observed. The riser chain was in good condition, with all measurements +90%. Neither of the two anchors was observed. The riser of mooring #2 contained two swivels, while there was no swivel observed in the riser of mooring #3.
- 3.2.2 Proposed Corrective Action. A swivel should be inserted in the riser of #3 mooring.

3.3 Navigation Buoys

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- 3.3.1 <u>Findings.</u> The condition of these buoys is generally good-to-excellent. The topside portion of each of the buoys is in good condition; minimal pitting was observed below the waterline. The bridles and risers are in good condition; all double link measurements were +90%. The anchors of both buoys were located and there was no evidence of dragging. The only notable observations were the existence of a box swivel in place of a standard swivel in one of the risers, and a 4 5' length of riser chain wrapped around the clump anchor, both in the Starboard buoy.
- 3.3.2 Proposed Corrective Action. None.

4.0 MOORING INSPECTION COMMENTS/RECOMMENDATIONS

4.1 <u>AFDB-7.</u> The fact that over 70% of the ground legs had measurements of less than 90% of original wire diameter at some point along their length indicates that the mooring may be in need of overhaul. It is recommended that at least the first two shots of chain in each leg be replaced with new chain, unless a thorough engineering analysis indicates that fewer legs are required. Some legs may require additional new chain depending on the specific location and extent of the wear zone. A cost estimate for new chain and associated hardware is presented in Annex D. Pending results of the analysis to specify the mooring requirements of AFDB-7, it is recommended that only the segment of Leg #22 previously identified be replaced immediately.

Consideration should be given to the possibility of providing cathodic protection for the mooring, especially in the event any of the legs are replaced during overhaul.

Maintenance of proper ground leg catenary is important in order to dampen dock motion and minimize the movement of the dock relative to nearby vessels of much smaller sail area. In view of the fact

that the catenary of many of the legs apparently should be tightened, it is recommended that action be taken prior to completion of the analysis previously mentioned.

Pending the next overhaul, it is recommended that the annual inspection of at least two of the legs by British M.O.D. be continued. Results of these inspections should be forwarded to CHESNAVFAC-ENGCOM for inclusion in mooring maintenance files.

4.2 <u>Sixth Class Moorings.</u> Records and conversations with British M.O.D. in Holy Loch confirmed that regular routine inspections, maintenance, and overhauls are performed on these moorings.

It is recommended that any change in the location, type, or number of these moorings be reported to the appropriate activities (including CHESNAVFACENGCOM) so that an accurate inventory of mooring facilities may be maintained.

4.3 <u>Navigation Buoys.</u> These buoys should remain in excellent condition under the current program of inspection and maintenance administered by the British Navy.

ANNEX A AFDB-7 MOORING INSPECTION REPORTS INSPECTION REPORT FOR EACH LEG TRANSIT FIXES

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MOORING INSPECTION REPORT

1	FACILITY MAVACTDET, HO	OLY LOCH, U	1	3. TYPE/CLASS MOCRING Special Dry Dock	4.LEG NUMBER:	
_	THISDECTION	DATE	DIVER S	WATER DEPTH	ENGINEER	INITIALS
٦٠	INSPECTION	18-245UN&2	PRONIA		M.M. WALTER	

CATENARY DATA:



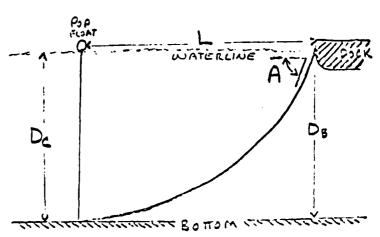
L = ____ ft UNABLE TO MEASURE

DR = 84.6 ft

D_C = 84.6 ft

NOTES: Depths @ Mean Low Water Springs

"A" recorded in winds 10 KTS or less



COMMENTS:

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CONFIGURATION, Pad Eye-To-Waterline:

_ NOT OBSERVED

OTHER DATA:

Relative Bearing: 000° at deck edge

A/A deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.

	MOORING INSPECTION REPORT														
	1. FACILITY 2. MOORING NO 3. TYPE/CLASS MOORING 4. LEG NUMBER: NAVACTDET, HOLY LOCH, UK AFDB-7 Special Dry Dock Z														
	SPECTI	ION	DATE		DIVERS	;		· ·		TER DE	PTH E	NGINE		<u>_</u> ،	 INITIALS
-			8-24 50	185		Pro	NIA				للح	<u>M.M.</u>	WAL	TER	
Comments	AL CHAIN IN SECTION I IS	COMTED - GOOD CONDITION						٠			SILTY MUDBY BOTTOM- DIVER COULD PUT HAND IN 1/2-2'				inks including detachables are counted (see config- irement
Voltmeter reading, mV															#1; all links includin Link measurement
(Note2)															a]] c meas
z ő			5%0	۶"ه											I
CONDITION +8	2	2			576.0	0,¶/. S	9. KS	JD	Q	√p	10				ing link is S = Single
Link # or Depth, ft (Note 1)			# 24	# 25	72 #	# 27	# 28	,02	, 아	,00)					 chor joining surement, S =
COMPONENT	SECTION I	•	SECTION II	•	2		=	Section III	:						Note 1: First link after anchor joining link uration, next page). Note 2: D = Double Link measurement, S = Sing

ASSET ALLEGAMENT REPORTED - RECEIVED

•

MOORING INSPECTION REPORT FACILITY 2. MOORING NO. 3. TYPE/CLASS MOORING 4.LEG NUMBER: 2 NAVACTDET, HOLY LOCH, UK AFDB-7 Special Dry Dock DIVERS WATER CEPTH INITIALS DATE ENGINEER INSPECTION 18-24JUN82 PRONIE M.M. WALTER

CATENARY DATA:

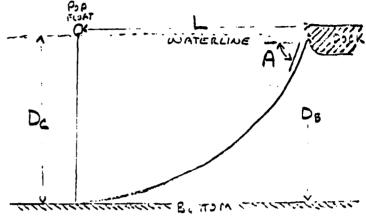
TOO CONSTRUCTOR RECORDS - NOOROOK

$$D_C = 96.8$$
 ft

NOTES: Depths @ Mean Low Water Springs

"A" recorded in winds 10 KTS or less

A' RECORDED IN WINDS 30-40 KTS



COMMENTS:

CONFIGURATION, Pad Eye-To-Waterline:

PADEJE + ANCHOR JOINING LINK + 20 LINKS TO STOPPER + 2 LINKS
TO CHOCK + 6 LINKS TO WATERLINE

OTHER DATA:

Consideration of the Control of the

Relative Bearing: 010° at deck edge

MA deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.

	MOORING INSPECTION REPORT															
1. FAC	CIDET,	HOLY	LOCH	, UK		MOORI FDB-7	NG NO			s MOGR		4. [EG NU	MBER:	3	
	SPECT		DATE	Twee	DIVER	s P _{IZOA}	,,	·		TER DE	РТН Е	NGINE				INITIALS
=		<u></u>	6 61	10012		160	1					1.19.	. WA	LTER		<u></u>
Comments	CHAIN SLIGHTLY PITTED; ALL	رء									SLACK CHAIN ON BOTTOM					links including detachables are counted (see configurement
(2) Voltmeter 0% reading, mV																l links includir easurement
(Note2)				Φ.					_							#1; all
l l≅				9 % 5												is //
CONDITION +90% +80	5	10	d, 2//S		21/25	5%,	۶%,۵	20	af	م	1/D		-			link : Sing
Link # or Depth, ft	416/17	£2/22#	—	52 #	72 #	L2 #	87 #F	,07	۷٥٬	,00)	80,				• ·	chor joining surement, S =
COMPONENT	Section I		SECTION IL	,			·	SECTION III								Note 1: First link after anchor joining link is #1; all links in uration, next page). Note 2: D = Double Link measurement, S = Single Link measurement

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MOORING INSPECTION REPORT

		3. TYPE/CLASS MOORING Special Dry Dock	ALEG NUMBER:	
5. INSPECTION DATE DIVE	Promie	WATER CEPTH	ENGINEER M. M. WALTER	INITIALS

CATENARY DATA:

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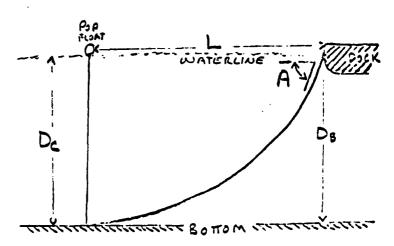
7

$$D_B = 99.3$$
 ft

$$D_C = 98.3$$
 ft

NOTES: Depths @ Mean Low Water Springs
"A" recorded in winds 10 KTS
or less

A' RECORDED IN WINDS 30-40 KTS



COMMENTS:

CONFIGURATION, Pad Eye-To-Waterline:

PADEYE - ANCHOR JOINING LINK + 6 LINKS + DETACHABLE LINK + 11 LINKS
TO STOPPER + 5 LINKS TO CHOCK + 5 LINKS TO WATERLINE

OTHER DATA:

Relative Bearing: Old at deck edge

NA deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.

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MOORING INSPECTION REPORT 2. MOORING NO 3. TYPE/CLASS MOCRING ALEG NUMBER:

1. FACILITY MAVACTDET, HOLY LOCH, UK

AFDB-7

Special Dry Dock

M.M. WALTER

5. INSPECTION

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Control of the contro

DATE 18-5121265

DIVERS COOPER WATER CEPTH

ENGINEER

INITIALS

CATENARY DATA:

45 ft

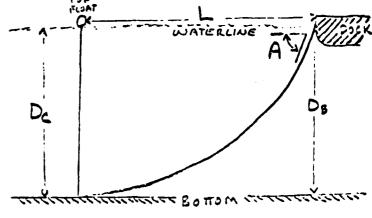
 $D_{R} = 100.6$ ft

 $D_{\rm C} = 97.6$ ft

NOTES: Depths @ Mean Low Water Springs

"A" recorded in winds 10 KTS or less

A' RECORDED IN WINDS 30-40 KTS



COMMENTS:

CONFIGURATION, Pad Eye-To-Waterline:

PADEYE - ANCHOR JOINING LINK + 20 LINKS TO STOPPER + 4 LINKS TO CHOCK + SLINKS TO WATERLINE

OTHER DATA:

Relative Bearing: OSO° at deck edge

N/A deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.

MOORING INSPECTION REPORT 1. FACILITY 2. MOORING NO 13. TYPE/CLASS MOORING 4. LEG NUMBER:																
SAVACIDET, HOLY LOCH, UK DATE DIVIDING 11-245cm/2					DIVER	AFDB-7			Special Dry Dock			ENGINEER M. MACTER			5	INITIALS
Comments	ALL LINKS IN SECTION I COATED										HARBER BOTTOM: 4-5" PENETRATION 8-9 LINKS LOOSE ON BOTTOM					links including detachables are counted (see configurement
) Voltmeter reading, mV			-													#1; all links includin Link measurement
CONDITION (Note2) +90% +80% -80%				۷,5	d.1//S											I
+90 z	70	9/	0,3/5			<i>4,7/5</i>	a. % \$	95	4	70	70					link is Single
Link # or Depth, ft (Mote 1)	415/16	02/61#		\$2 #	# 26		82 #	,07	46'	60'	80′					chor joining.
COMPONENT	Section I		SECTIONIE					Section III			-					Note 1: First link after anchor joining link is uration, next page). Note 2: D = Double Link measurement, S = Single

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MOORING INSPECTION REPORT

) ' '	MAVACTDET, I	HOLY LOCH, U		3. TYPE/CLASS MOCRING Special Dry Dock	ALEG NUMBER:	
5.	INSPECTION	DATE VR-ZY Tun 82	COAPER	WATER DEPTH	ENGINEER M.M. 14) OL TIER	INITIALS

WATERLINE

Committee BO HOW I LALLE COLLEGE

CATENARY DATA:

L = 3 ft (USS HONLEY DIVERS APR82)

DB = 102.1 ft

DC = 102.1 ft

NOTES: Depths @ Mean Low Water Springs

"A" recorded in winds 10 KTS or less

A' RECOKDED IN WINDS 30-40 KTS

COMMENTS:

CONFIGURATION, Pad Eye-To-Waterline:

PADETE - AMENDE JINNING LINK + 16 LINKS TO STOPPER + 6 LINKS
TO CHOCK + 6 LINKS TO WATERLINE

OTHER DATA:

process recovered processes recovered becomes

Relative Bearing: 1000 at deck edge

A deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.

MOORING INSPECTION REPORT																		
								2. MOORING NO. 3. TYPE/CLASS MOORING AFDB-7 Special Dry Dock						LEG NUMBER: 6				
	DATE						IVERS			WATER DEPTH E				ENGINEER MAINTENANT			s	
5. INSPECTION 18-245med						COOPER								M.M. WALTER				
Comments	AL LINKS IN SECTIONI CORTED		1					•								ng detachables are counted (see config-		
Voltmeter reading, mV			-													II; all links including		
(Note2)			··· .													all		
					2%/s											i	•	
CONDITION +90% +80	9	de	۶//۲۵	21/8	5	2.4%.5	4,2/	90	de	Sp	ar				-	link is	211184	
Link # or Co Depth, ft +	51	#22/23	\$ 92 #		82 #	S PS H	d's/2 05 #	20,		, 00,	, ,08	I				joining	6.113.113.11	
COMPONENT	SECTION I		SECTION II					Secnon III			•					Note 1: First link after anchor joining uration, next page).		

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1.	E/CILITY		2. MOORING NO.	3. TYPE/CLASS MOCRING	4.LEG NUMBER:	
	MAVACTDET, H	OLY LOCH, U	AFDB-7	Special Dry Dock	1 6	•
5.	INSPECTION	DATE 18-24 Warez	Cooler	WATER DEPTH	ENGINEER M.M. WALTER	INITIALS

Ministrictions 80 non inverseliance

CATENARY DATA:

L = S4 ft

DB = 104.4 ft

DC = 102.4 ft

NOTES: Depths @ Mean Low Water Springs

"A" recorded in winds 10 KTS or less

A' RECORDED IN WINDS 30-40KTS

COMMENTS:

1.00

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CONFIGURATION, Pad Eye-To-Waterline:

PADETE - ANCHOR JOINING LINK + ZOLINKS TO STOPPER + SLINKS TO
CHOCK + SLINKS TO WATERLINE

OTHER DATA:

Relative Bearing: 070° at deck edge

NA deck edge-to-pop float

						-			•
		CONDI	CONDITION (Not	(2ي		_	5.	1	
COMPONENT	Depth, ft (More 1)	+90%	+80%	-80%	reading, mV	Comments		FACII AVAC	
SECTION I	11/01	40				PARTIALY COATED.	SPECTI	LITY	
ę	02/614	10						HOLY	
SECTIONIL	ħ2 #	0.1/s			-		DATE 18-24:	LOCH	-
	\$2 #	5%0					·	, ик	
	77 #	£"p					DIVERS	72.	
	L2 #		0,3%5				RONI		MOO
	#28		54.0				<u>A</u>	NG NO	RING
Section III	,02	4/0						3. TYP	NSPE
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-	.08	(i)				SOLID BOTTOM - KNEEKED ON IT	1	RING	ORT
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MOORING INSPECTION REPORT 1. FACILITY 2. MOORING NO 3. TYPE/CLASS MOORING 4.LEG NUMBER: AFDB-7 Special Dry Dock MAVACTDET, HOLY LOCH, UK DIVERS WATER CEPTH PHTIALS **ENGINEER** DATE 5. INSPECTION PRONIA 18-24 Jun84 M.M. WALTER

CATENARY DATA:

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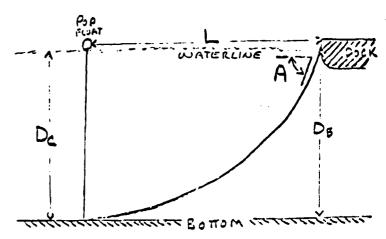
たしたなから、そのなどなるというというという。

$$D_{B} = 89.3$$
 ft

$$D_{C} = 89.3$$
 ft

NOTES: Depths @ Mean Low Water Springs
"A" recorded in winds 10 KTS

or less



A' RECORDED IN WINDS 30-40 KTS

COMMENTS:

CONFIGURATION, Pad Eye-To-Waterline:

PADEYE - ANCHOR JOINING LINK + 18 LINKS TO STOPPER + 5 LINKS TO CHOCK + 5 LINKS TO WATERLINE

OTHER DATA:

Relative Bearing: 0700 at deck edge

AAA deck edge-to-pop float

Γ									INSPE							
1	FACI AVA(LITY CIDET,	HOLY	LOCH	, UK		MOORI FDB-7	•	3. TYP Speci		s моон ry Doc		4. I	EG N	MBER:	
5.	IN	SPECT	I NA	DATE 18-24	1	DIVER	s Pro	NIA		WA	TER DE	1	NGINE		4LTE	INITIALS
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		_														counted
		Rust		MEW CHAIN												are c
	ıts	וחשויי		S C												ables
	Comments	MEDIUM		NEU												detachables
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_	В, шV															nclud
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(Note2)	-80%			· ,												#1; all links ir Link measurement
ON (NO	+80%															
CONDITION	+90%	df	97	0,7/9	0.3/5.5	0,9	Ghi D	Q.3%9	Se	do	J.	d/				Note 1: First link after anchor joining link is uration, next page). Note 2: D = Double Link measurement, S = Single
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		HV		Ħ			1		SECTION III							First link after anchor joinin uration, next page). D = Double Link measurement, S
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	8								ŀ						1	Not Not

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I. FACILITY Z. MODRING NO 3. TYPE/CLASS MOCRING 4.LEG NUMBER: MAVACTDET, HOLY LOCH, UK AFDB-7 Special Dry Dock 8 DIVERS INITIALS WATER CEPTH DATE ENGINEER 5. INSPECTION M.M. WALTER 18-24 JUN82 RONIA

> Pop FLOAT

> > WATERLINE

KINGGERANGER BONON INTERESTREES

Ds

CATENARY DATA:

1 L = 120 ft

$$D_R = 83$$
 ft

$$D_C = 87$$
 ft

NOTES: Depths @ Mean Low Water Springs

"A" recorded in winds 10 KTS or less

A' RECOLDED IN WINDS 30-40 KTS

COMMENTS:

CONFIGURATION, Pad Eye-To-Waterline:

PAO EYE - ANCHOR JOINING LINKS + 17 LINKS TO STOPPER + 2 LINKS +

DETACHABLE LINK + 3 LINKS TO CHOCK + 7 LINKS TO WATERLINE

OTHER DATA:

Relative Bearing: _Ogo• at deck edge

NA deck edge-to-pop float

								INSPE								
1. FAC	CTDET,	HOLY	. LOCH	, UK	1	MOORI FDB-7	٠ .	3. TYP Speci	E/CLAS ial Dr			4. L	EG NL	MBER:	9	
	SPECT	ION	DATE		DIVER	PROM	\ <u>'</u>		WA	TER DE	- 1	NGINE		LTER		INITIALS
=	-		18-243	INTE		<u>rkon</u>	I I		<u> </u>			171.17	. WA	LIER	Ī	1,
Comments	Medium Rust/FLAKY								LEG DIOPS VERTICALLY AT SURFACE	Suppe						links including detachables are counted (see configurement
Voltmeter reading, mV			-													#1; all links includin Link measurement
(Note2)			··· .													meası
zlő				<u> </u>												
			۵	٥	چ	٥	ج.	,0								link is Single
COND +	3	9	2 % ,0	57/6.0	۵٬۴۵	0.8/5	d"%>	5.4.0	10	10	10	10				50 II
Link # or Depth, it	412/13	02/61+	424	52 *	\$24	#27	82#	b2#	20,	40,	100	,08				chor joinir .urement, S
COMPONENT	Secrion I	V	SECTIONIL	•	•	11	11	•	SecrowIII							Note 1: First link after anchor joining uration, next page). Note 2: D = Double Link measurement, S =

COLUMN SCOLOGO, RESIDENCE - SONSWELL FLAGGER BY COLOGO, RESPONSE TO SONSWERS SEED, RESPONSED TO LIVE SEED.

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١.	FACILITY		2. MOORING NO	3. TYPE/CLASS MOORING	4.LEG NUMBER:	
·	MAVACTDET, HO	OLY LOCH, U	AFDB-7	Special Dry Dock	1 9	
_	THERECTION		DIVERS	WATER DEPTH	ENGINEER	INITIALS
٥.	INSPECTION	18-24 Jan82	PRONIA	<u> </u>	M.M. WALTER	1

CATENARY DATA:

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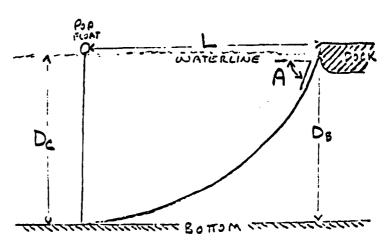
1.3

Proposition of the Control

$$D_{B} = 84.4$$
 ft

NOTES: Depths @ Mean Low Water Springs

"A" recorded in winds 10 KTS or less



COMMENTS:

CONFIGURATION, Pad Eye-To-Waterline:

PADETE - ANCHOR JOINING LINK + 18 LINKS TO STOPPER + I LINK +
DETACHABLE LINK + 3 LINKS TO CHOCK + 6 LINKS TO WATERLINE

OTHER DATA:

Relative Bearing: 090° at deck edge

170° deck edge-to-pop float

N		SPECT!	ION	DATE 18-24 J		2.	MOORI FDB-7	•	3. TYP Speci	E/CLAS al Dr	S MOOR Y DOC	ING k PTH E	NGINE	ER WA	10	-	INITIA
	Comments	ALL COATED TO CHOCK; BADLY RUSTED AND FLAKY	ST							GOOD CATENARY: MAINTAINS	20						ig detachables are counted (see config
Voltmeter	reading, mV												1				links including
ON (Note2)	×					0.4/5											M: all
CONDITION	+90%	10	JD	0,1/2	٥,٧/٤	5	0.3/2	0.8/s	0.3/5	\ 0 \	40	3	10				g link is
Link # or	Depth, ft (Mare 1)	45/6	81/11#	423	# 2d	#2S	426	#21	#28	,02	40,	,09	80,				anchor joining se).
	COMPONENT	SECTION I	•	Settion II	•	t	•	5	\$	Section III	T	e e	H			-	Note 1: First link after an uration, next page)

1. F. CILITY

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MAVACTDET, HOLY LOCH, UK

AFDB-7

DIVERS

2. MOORING NO 3. TYPE/CLASS MOGRING Special Dry Dock

4.LEG NUMBER:

M.M. WALTER

10

5. INSPECTION

DATE 18-24 JUN 82

(RONIA

WATER DEPTH

ENGINEER

MITIALS

CATENARY DATA:

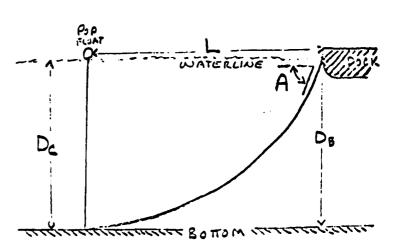
78°

DR = 84.6 ft

DC = 81.6 ft

NOTES: Depths @ Mean Low Water Springs

"A" recorded in winds 10 KTS or less



COMMENTS:

CONFIGURATION, Pad Eye-To-Waterline:

PADEYE-ANCHOR JOINING LINK + 8 LINKS + DETACHABLE LINK + 9 LINKS TO STOPPER + DETACHABLE LINK + 3 LINKS TO CHOCK + 6 LINKS TO WATERLINE

OTHER DATA:

Relative Bearing: /20° at deck edge

1600 deck edge-to-pop float

<u>NA</u>				LOCH DATE	I, UK	A DIVER	MOORI FDB-7	NG NO	Spec	CTION E/CLAS. ial Dr	S MOOR	IING k PTH E	NGINE	ER	MBER:	
Commonts	Commence	SOME FLAKING:	MEDIUM RUST						٠							
 	reauing,			-												
TION (No	7 +80% -80%				0,3/55	σ <i>,</i> ///s	0.1/25	0.4%5	Q							
or	(Nore 1) +90%	46/7	422/23 10	0.1/S 12#	* 25	# 2F	#21	#28	a,%s 62#	20' 10	40. JD	00, 70	d/ ,08			
TNUMBON	CUPITONENI	SECTIONI	•	SECTIONI	د	ų.		•	.,	Section III	Ţ	•	.,			

Salay Reserved, Reserved Reserved Reserved Reposed Reserved Banacaes Reserved Reserved Reserved Reserved Reserved

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1. FICILITY 2. MOORING NO 3. TYPE/CLASS MOORING 4.LEG NUMBER: MAVACTDET, HOLY LOCH, UK AFDB-7 Special Dry Dock 11 DIVERS WATER DEPTH BUTIALS ENGINEER DATE 5. INSPECTION PRONIA 18-245UNFZ m.m.

CATENARY DATA:

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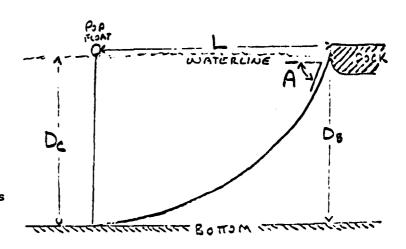
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Property Brecovery Boseston

$$D_{\rm B} = 78.9 \, \rm ft$$

$$D_{C} = 82.9 \, ft$$

NOTES: Depths @ Mean Low Water Springs
"A" recorded in winds 10 KTS
or less



A' and A" recorded in winds 30-40 KTS

COMMENTS:

CONFIGURATION, Pad Eye-To-Waterline:

PAD ETE -ANCHOR JOINING LINK + 18 LINKS TO STOPPER + 4 LINKS
TO CHOCK + 7 LINKS TO WATERLINE

OTHER DATA:

Relative Bearing: 180° at deck edge

N/A deck edge-to-pop float

		 ;-				MOOR	RING	INSPE	CTIO	I REP	TRC						
1. FACI	CITY	HO! V	IOCH	און	- 1	MOORI FDB-7	•			s MOOF		4. I	EG NU	MBER:	اک		
		1	DATE		DIVERS				IWA	TER DE		NGINE				INITIA	LS
5. IN:	SPECTI	UN	18-215	اعلاما	<u> </u>	LONIA	a/co	PER			<u></u>	<u>M. M</u>	. W	ALTE 1	2		
Comments	NOF INSPECTED: NOTE 3	•														g detachables are counted (see config-	Link measurement
Voltmeter reading, mV			-													links including detachables	Jink measurement
(Note2)			···· .													all	meas
1 % 1																i.	_ \
																nk is	ngle
+90%		i	3	\$	5	10										1 <u>1</u>	= S1
Link # or Depth, ft (Marc 1)			,02	, 9ի	,09	,08									••	chor joinin	surement, S
COMPONENT	SECTION I	SECTION II	SECTION III	7	#	7					-					Note 1: First link after anchor joining link uration, next page).	Note 2: D = Double Link measurement, S = Single

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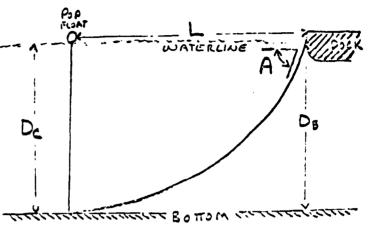
MOORING INSPECTION REPORT 1. FICILITY 2. MOORING NO 3. TYPE/CLASS MOORING 4.LEG NUMBER: AFDB-7 MAVACTDET, HOLY LOCH, UK Special Dry Dock 12 DIVERS WATER CEPTH MITIALS ENGINEER DATE 5. INSPECTION PRONIA/COOPER M.M. WALTER 18-24 Jun 82

CATENARY DATA:

$$D_R = 77.5$$
 ft

$$D_C = 77.5$$
 ft

NOTES: Depths @ Mean Low Water Springs "A" recorded in winds 10 KTS or less



COMMENTS:

(

ACCOUNT OF THE PROPERTY OF THE

CONFIGURATION, Pad Eye-To-Waterline:

NOT OBSERVED

OTHER DATA:

180° at deck edge Relative Bearing:

~/A deck edge-to-pop float

							MOOI	RING	NSPE	CTION	REPO	DRT					
222	1. FACI	LITY CTDET,				A	FDB-7	NG NO			s моов ту Doc	k		EG NU	мвек:		
	5. IN	SPECTI	LAN L	DATE 8-24	J.w82	DIVER!		AYL	wor		TER DE	1	NGINE M.M	er I. We	LTER	ζ	INITIALS
# 25	Comments	SCIGHTCY RUSTED	•										CLEAN, Duce CHAIN;	VISIBILITY AT BOTTOM 2';			detachables are counted (see config-
	voltmeter Voltmeter Veading, mV										899	070					#1; all links including o
	Ž 70							٥,٥	Q.								#1; a Link m
39 25						0,	۵	<i>\$</i> /\$	8,5	۵				_			link is Single
K 7.7		\$	5	40	4 0	s ./ .o	0.1/s			0.3/5	3	96	√	10			ng lin S = Si
Res sea	Link # or Depth, ft (Note 1)	2/1#	#6/7	b1/81#	77/17#	\$2,#	424	#27	82#	62#	,02	,oh	,09	,08			chor joini surement,
4 5000 000 000 000	COMPONENT	SECTIONI	••	•		Section II	••	•	\$	·	Secnow III	3	و	5			Note 1: First link after anchor joining link is uration, next page). Note 2: D = Double Link measurement, S = Single

I. FACILITY MAVACTDET, HOLY LOCH, UK

AFDB-7

2. MOORING NO 3. TYPE/CLASS MOORING Special Dry Dock

4.LEG NUMBER:

M.M. WALTER

13

5. INSPECTION

DIVERS DATE 18-24 Jun 82 DAHL/AYLSWORTH

WATER DEPTH

ENGINEER

MITIALS

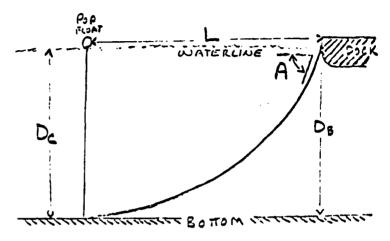
CATENARY DATA:

 $D_R = 20.3$ ft

 $D_C = 80.3$ ft

NOTES: Depths @ Mean Low Water Springs

"A" recorded in winds 10 KTS or less



COMMENTS:

X2

8

CONFIGURATION, Pad Eye-To-Waterline:

PADETE-ANCHOR JOINING LINK + 15 LINKS + DETACHABLE LINK + 4 LINKS TO STOPPER + 3 LINKS TO CHOCK + 6 LINKS TO WATERLINE

OTHER DATA:

Relative Bearing: 175° at deck edge

/70° deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.

										CTION							
	AVAC	CITY	HOLY	LOCH	, υκ		MOORI FDB-7	•		E/CLAS			4. L	EG M	MBER:	14	
		SPECT		DATE 18-24 J	1	DIVER	5	AYLS	· · · · · · · · · · · · · · · · · · ·	WA	TER DE	PTH E	MGINE		ALTE		INITIALS
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																	counted
								İ									are
	6																bles
	Comments							•									detachables
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	eading,			-						469	(1)	679	668				int
^	read									೨	9	9	ē				links uremen
(Note2)	-80%			· ,													#1; all links in Link measurement
_	+80%				0.1/2	Q.8,											
CONDITION			9	٥	. <u>**</u>	8/,8	,O	٥٫٫	٥			D	٩		-	-	nk is Ingle
Ŝ	+90%	70	<i>را</i>	55/"D			5%.0	0.1/55	₫ , %\$	3	10	10	10		-		ng 11
	<u> </u>	7	110	~	-	N	و	7	8			-		ı			oinii nt, S
I.Ink	Depth, f (More 1)	2/1#	01/67	#23	424	\$2#	#26	12#	82 _#	20,	ص	60'	,08				hor j
												•					age). measu
				,								:					Note 1: First link after anchor joining link is uration, next page). Note 2: D = Double Link measurement, S = Single
		H		SECTION IL			'			Section III							link n, ne ıble
		VOI VOI	:	CT10	£	;		3	=	CT10	-	:	=].	rst ation
	NENT	Sertion I		\$ <i>e</i>						\ <u>\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\</u>						İ	1: Fi ur 2: D
	COMPONENT																Note 7

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 \bar{S}

2. MOORING NO 3. TYPE/CLASS MOCRING LEG NUMBER:

NAVACTDET, HOLY LOCH, UK AFDB-7 Special Dry Dock 14

5. INSPECTION DATE DIVERS WATER CEPTH ENGINEER INITIALS

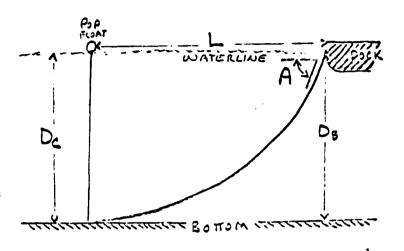
ON M. WALTER

CATENARY DATA:

$$D_{R} = 80$$
 ft

$$D_C = 80$$
 ft

NOTES: Depths @ Mean Low Water Springs
"A" recorded in winds 10 KTS
or less



COMMENTS:

1

CONFIGURATION, Pad Eye-To-Waterline:

PAGETE-ANCHOR JOINING LINK + 17 LINKS TO STOPPER + 1 LINK
+ DETACHARLE LINK + 3 LINKS TO CHOCK +
U LINKS TO WATERLINE

OTHER DATA:

Relative Bearing: 220° at deck edge

Z35° deck edge-to-pop float

						моог	RING	INSPE	CTION	REPO	ORT					
I. FACI	CTDET,	HOLY	LOCH	. UK	- 1	MOORI FDB-7	NG NO.		E/CLAS			4. L	EG NU	MBER:	15	
	SPECT	104	DATE		DIVER	,	,	·	WA	TER DE	PTH E	NGINE				INITIALS
		/	18-24 3	[182]	01	JHL/	AYU	WOR.	<u>M</u>			<u>M.M.</u>	WAL	TER	<u> </u>	7
Comments	MEDIUM RUST			•				CHAIN TENDS STRAIGHT	, MITS			4 LINKS LIFTED FILM MUD				inks including detachables are counted (see contig- urement
Voltmeter reading, mV								817	669	689	189					/l; all links includin ink measurement
(Note2)																all meas
· • • •																s // ;
+902 +80	de J	JD (1)	۵٫%۶	S//v.is	0.1/5	5/1. p	9.4/5	20	<u> </u>	10	(1)	15				link i Single
Link # or Depth, ft		81/LI #	424		27 ₩		#28	,02	,01	.09	-	BELOW			• ·	chor joining surement, S =
COMPONENT	SECTION I		SECTIONI	•	=		13	SECTION III	•	**	,	g.				Note 1: First link after anchor joining link is uration, next page). Note 2: D = Double Link measurement, S = Single L

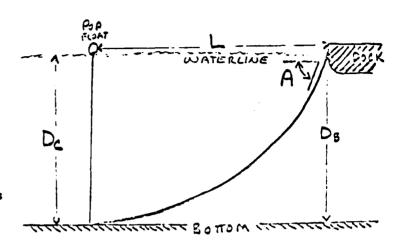
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1. FACILITY		Z. MOOR	ING NO	1. TYPE/C	LASS MOCRING	4.1,	EG NUNBER:			====
MAVACTDET, HO	OLY LOCH, UI	AFDB-7		Special	Dry Dock		15	3		
5. INSPECTION		DIVERS) 1		WATER DEPTH	ENGIN	EER		INITIALS	
5. INSPECTION	18-24 Jun82	DAHL	Ayısı	NORTH		M.p	1. WALTER			

CATENARY DATA:

NOTES: Depths @ Mean Low Water Springs
"A" recorded in winds 10 KTS
or less



COMMENTS:

CONFIGURATION, Pad Eye-To-Waterline:

PAO ETE-ANCHOR JOINING LINK + 18 LINKS + DETACHABLE LINK
+ 1 LINK TO STOPPER + 3 LINKS TO CHOCK +

S LINKS TO WATERLINE

OTHER DATA:

Relative Bearing: 230° at deck edge

NA deck edge-to-pop float

										I REPO						
I. FACI	CTDET,	HOLY	LOCH	ι, υκ		MOORI FDB-7		•		s Moca		· L	EG NU	MBER:	16	•
5. IN	SPECTI	I MA	DATE	}	DIVER		14	LINA	1	TER DE		NGINE				INITIALS
			8-24	5w82		JHA(AY	Lubr	<u>'M </u>		 -	<u>M.M.</u>	WAL]	EK		~~~
Comments	MOST LINKS BADLY RUSTED;	FLAKES EASILY.								GROWTH STOPS AT 40' DEPTH						inks including detachables are counted (see configurement
Voltmeter reading, mV									299	219	h89	189				; all links includin -
(Note2)			·•• .													all c mea
						0. %S	a. <i>1</i> //s									
+90% +80	ê,	70	d/	5%,0	811.0	5,	8	0.1/5	70	10	<i>J</i> D	d'				link is Single
Link # or Depth, ft (Mote 1)	11/01+	419/20	12/02#	#23	¥24	\$2#	426		,02	اراه,	,09	,08		1	• ·	chor joining :urement, S *
COMPONENT	SECTION I	•	5	SECTION II	P.	7	•	ų	SECTION II	1.	· h	.,			-	Note 1: First link after anchor joining link is uration, next page). Note 2: D = Double Link measurement, S = Single

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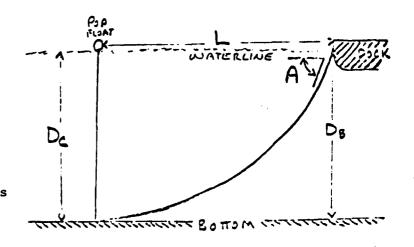
•	NAVACTDET, H	OLY LOCH, U		3. Type/CLASS MOCRING Special Dry Dock	4.LEG NUNBER:	
5.	INSPECTION	DATE	DAHL AYL	WATER DEPTH	ENGINEER M.M. WALTER	INITIALS

CATENARY DATA:

$$D_{\rm B} = 74.7$$
 ft

$$D_{\rm C} = 74.7$$
 ft

NOTES: Depths @ Mean Low Water Springs
"A" recorded in winds 10 KTS
or less



COMMENTS:

[]

CONFIGURATION, Pad Eye-To-Waterline:

PAOFIE - ANCHORTOWING LINK + 14 LINKS + DETACHABLE LINK + 3

LINKS TO STOPPER + 4 LINKS TO CHOCK + 5 LINKS

TO WATERLINE

OTHER DATA:

Relative Bearing: 195° at deck edge

225 deck edge-to-pop float

						MOOI	RING	INSPE	CTION	REPO	ORT						
1. FAC	CTDET,	HOLY	LOCH	. UK		MOORI FDB-7	٠ .		E/CLAS			4. L	EG NU	MBER:	17		
	ISPECT	1011	DATE		DIVER	5	J/JE			TER DE	PTH E	NGINE M. M.		LTE	ر	INITIA	LS
nts	MEDIUM-To- HEAVY RUST															inks including detachables are counted (see contig-	
Voltmeter comments	Medi		-							719	811	919	519			nks including detach	rement
N (Note2) 30% -80%			0	0				0,3/								n; all	Link measurement
CONDITION +90% +80	3	g	0.0	90	0.8/s	0,3/65	0.8/5	1/5 S	2.1/2	/D	JD	70	10			link is	s Single
Link # or Depth, ft	21/21#	h2 #	\$2#	426		87 #	62#	\$₹ +	#31	,02	,0ի	,09	,08		•.	chor joining	surement, S
COMPONENT	SECTION I	SECTION II	*	,		•	•	,	,	SECTION III	s.	ď	4			1	Note 2: D = Double Link measurement, S = Single L

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I. FACILITY	2. MOORING NO. 3.	TYPE/CLASS MOGRING	4.LEG NUMBER:	
MAVACTDET, HOLY LOCH, UK	AFDB-7 Sp	ecial Dry Dock	17	
DATE	VER S	WATER CEPTH EN	GINEER	INITIALS
5. INSPECTION DATE	SUTTON/ JELL	ا م	M.M. WALTER	

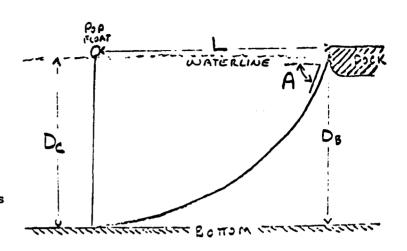
CATENARY DATA:

1

$$D_B = 75.6$$
 ft

$$D_C = 78.6$$
 ft

NOTES: Depths @ Mean Low Water Springs
"A" recorded in winds 10 KTS
or less



COMMENTS:

CONFIGURATION, Pad Eye-To-Waterline:

OTHER DATA:

Relative Bearing: 185° at deck edge

220 deck edge-to-pop float

							MOOF	RING I	NSPEC	TION	REPC	RT					
ľ	FACII VAC	TDET,	HOLY	LOCH	, UK	- 1	MOOR!! FDB-7	NG NO			y Doct		4. 1	EG M	MBER:	18	
		SPECTI	<u></u>	DATE		DIVERS		U/ Jé		WA	TER DEF		NG INE		TEX		INITIALS
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		PPE	Rusted									ملاه					are
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	Comments	No STOPPER	LIBHTLY									HAIA					tacha
	ပိ	\mathcal{N}	ت									7					inks including detachables are counted (see contig- urement
rer	λ Ε																Tudit
Voltmeter	eading,			-					099	675	675	579					s Inc
ļ,	<u> </u>									9	"	9	 		<u> </u>		Hink surem
(Note2)	708-			··· .													#1; all links in Link measurement
	+80%																
CONDITION	+90%	0	af	0.8/5	0.1/2	0.7/s	0.8%5	o,%s	40	20	de	10		 			irst link after anchor joining link is ration, next page). = Double Link measurement, S = Single
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	h, ft c. 1)	02/614	h7/52#	<u> </u>	¥2\$	#26	427	¥28	,02	,(,09	90,					join ent,
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		ΙV		ر۷٥					زرە	5	-					}	on, louble
	Ę	SECTION I	:	SECTION I	;	۲	3	5	SECTION III							-	First link after anchor joining link uration, next page). D = Double Link measurement, S = Sing
	COMPONENT	Se		Š					8								1:
	COM														<u></u>	<u>L.</u>	Note Note

1.	FACILITY		2. MOORING NO	3. TYPE/CLASS MOCRING	ALEG NUMBER:	
_	NAVACTDET, H	OLY LOCH, UP	AFDB-7	Special Dry Dock	18	
	INSPECTION		DIVERS	WATER DEPTH	ENGINEER	INITIALS
Э.	11122561104	18-24 JUN82	SUTTONI	ecco	M.M. WALTER	

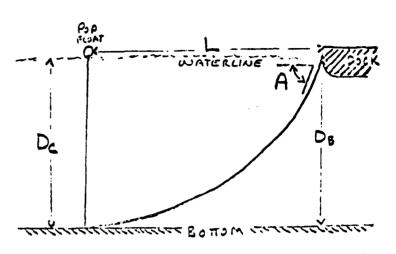
CATENARY DATA:

$$D_{R} = 77.4$$
 ft

$$D_C = 77.4$$
 ft

NOTES: Depths @ Mean Low Water Springs

"A" recorded in winds 10 KTS or less



COMMENTS:

7.7

CONFIGURATION, Pad Eye-To-Waterline:

PAO EYE - ANCHOR JOINING LINK + Z3 LINKS TO CHOCK + S LINKS TO WATERLINE

- No STOPPER

OTHER DATA:

Relative Bearing: 205° at deck edge

220° deck edge-to-pop float

	CTDET,	011	DATE		DIVER	MOORI FDB-7	NG NO	3. TYP Speci	E/CLA	SS MOOF	RING k	ENGINE		19	INITIA
Comments .	RUSTED AND FLAKY:	DADITION	10-245	w82		0176	<u> / 3</u>	APPROXIMATES STRAIGHT DOWN WITH P				CHAIN PRICED OUT OF MUD	TEN		links including detachables are counted (see config-
2) Voltmeter)% reading, mV								651	999	679	789				l links includir
CONDITION (Note2) +90% +80% -80%	70		2/8,0	5/8.0	0.1/5	0.9/5	0.8%5	J)	Jb.	S	90	2%5			link is #1; all links in
Link or Co Depth ft +		1 02/61#	424 8	#15 8	#26 5	\$ 12#	\$ 82#	r ,02	7 , 7			BELOW MUDLINE			•
COMPONENT	Section I	÷	Section II	•	11	*	<i>;</i>	Section III.		,	·	:			Note 1: First link after anchor joining uration, next page).

	EXCILITY NAVACTDET, HO	OLY LOCH, UI		3. TYPE/CLASS MOCRING Special Dry Dock	4.LEG NUMBER:	
5.	THISDECTION		SUTTON /	WATER DEPTH	ENGINEER M.M. WALTER	INITIALS

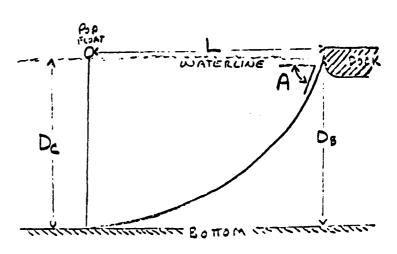
CATENARY DATA:

NEW MARKETER, MARKETS - CONTROLS

$$D_{\rm B} = 76.5$$
 ft

NOTES: Depths @ Mean Low Water Springs

"A" recorded in winds 10 KTS or less



COMMENTS:

CONFIGURATION, Pad Eye-To-Waterline:

PADEME- ANCHOR JUINING LINK + 16 LINKS TO STOPPER +

G LINKS TO CHOCK + G LINKS TO WATERLINE

OTHER DATA:

Relative Bearing: 285° at deck edge

N/A deck edge-to-pop float

#12 13 Jb
13 Jb 124 JD 158'D 158'D 158'D 158'D 158'D
5% 0 % 5 0 %
0.4%5 0.4%5 0.4%5 0.4%5
0.3%
0,7/5
0.7/5
V b f l s
#32 S/ND
20' JD 643
40' JD 651
60' 10 663
J.D
•

Ţ.	FACILITY		2. MOORING NO	3. TYPE/CLASS MOCRING	ALEG NUMBER:	
	MAVACTDET, HO	OLY LOCH, UP	AFDB-7	Special Dry Dock	20	
	THERECTION	DATE	DIVERS	WATER DEPTH	ENGINEER	INITIALS
5.	INSPECTION	18-245m82	SUTTON/JE	EUO	M.M. WALTER	

CATENARY DATA:

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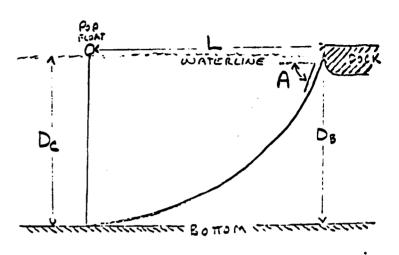
3

$$D_R = 78.3$$
 ft

$$D_{C} = 82.3$$
 ft

NOTES: Depths @ Mean Low Water Springs

"A" recorded in winds 10 KTS or less



COMMENTS:

CONFIGURATION, Pad Eye-To-Waterline:

PADETE-ANCHOR JOINING LINK + 17 LINKS + DETACHABLE LINK + 4 LINKS TO STOPPER + 4 LINKS TO CHOCK + 6 LINKS TO WATERLINE

OTHER DATA:

Relative Bearing: 2850 at deck edge

305° deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.

							MOOI	RING	INSPE	CTION	REPO	ORT					
i i		LITY CIDET,	HO! A	TOCH	ווע		MOORI FDB-7	•	3. TYP		s MOOR		4. I	EG N	MBER:	 Z1	
	_		1	DATE		DIVER			Speci		TER DE	PTH E	NGINE			-	INITIALS
5.		SPECT	UN	8243	w82		<u>Συπ</u>	on/:	<u>LEURO</u>				M. M	1. WE	YLTER	<u> </u>	
	Comments	HEAVY RUST; MUCH DEBRIS AROWN CHAIN							CHAN DOOPS STRAIGHT DIWN THEN LAPIDLY ON								ig detachables are counted (see contig-
Voltmeter	reading, mV			-					Sh9	658	599	199					/l; all links including ink measurement
(Note2)	-80%			·•• .													measu
- 1	700																Link
CONDITION	z +80		2	۵.	2	٩	<u>,</u>	٦٥							-		ik is
S	+90%	5	5%.0	0.%S	0.1/5	S%.D	0,1/2	0,3/,5	3	३	5	SD				<u> </u>	8 11n
Link # or	Depth, It (Nore 1)	Not Reamber	423	h2#	#25	97 #	#27	87 _#	,02	- 양	,09	80,					chor joinin surement, S
ENAMOGRACO	COMPONENT	SECTION I	SECTION IT	•	•	·	4	•	SECTION III		-,	•					Note 1: First link after anchor joining link is uration, next page). Note 2: D = Double Link measurement, S = Single L

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NAVACTORY, HOLY LOCH, UK		3. TYPE/CLASS MOCRING Special Dry Dock	ALEG NUMBER:	
S LUSPECTION DATE DIV	SUTTON J	WATER CEPTH	ENGINEER M.M. WALTER	INITIALS

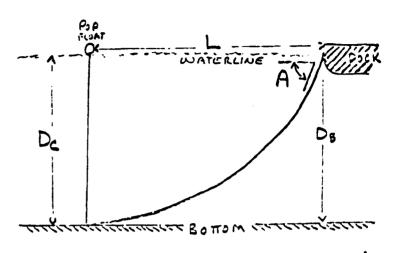
CATENARY DATA:

$$D_{R} = 79.3 \, \text{ft}$$

$$D_{C} = 79.3$$
 ft

NOTES: Depths @ Mean Low Water Springs

"A" recorded in winds 10 KTS or less



COMMENTS:

CONFIGURATION, Pad Eye-To-Waterline:

PADETE-ANCHOR JUNING LINK + 16 LINKS TO STOPPER + 6 LINKS TO CHOCK + 6 LINKS TO WATERLINE

OTHER DATA:

Relative Bearing: 290° at deck edge

3000 deck edge-to-pop float

	MOORING INSPECTION REPORT																
•		LITY	ע זמע	TOCH	אוו		MOORI FDB-7	•	3. TYP		s MOOR		4. I	EG NI	NBER:	عع	
DATE DIVERS WATER DEPTH ENGINE														<u></u>	INITIALS		
5.	114	SPECT.	IUN	1824.	sug2	<u></u>	UTTOI	J/Je	220				MM.	WA	TER		
	Comments	SciCHTLY RUSTED	•									SILTY BOTTOM APPROX. I' DEEP					links including detachables are counted (see contig- urement
Voltmeter	reading, mV			•					049	599	019	599					inks includin urement
(Note2)	-80%			,	0.1//.1												all all
	+802			0.1/65		0,%5											is // li
CONDITION	+90%	JD	0.7/5				54.0	0.8%S	\$	1P	10	JD					link Sing
or	Depth, ft	0.00		7#	£ 3	17#	5#	7#	,02	40'	,09	,08					chor joining surement, S =
	COMPONENT	SEETIMA I	I COLION		•	•		P	Section III	1	13	,					Note 1: First link after anchor joining link is #1; all links in uration, next page). Note 2: D = Double Link measurement, S = Single Link measurement

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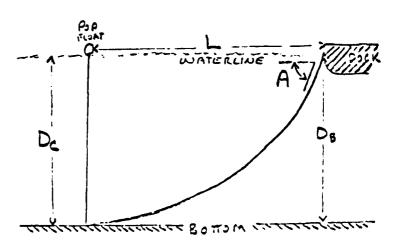
 FACILITY MANAGEDET, H	OLY LOCH. U		1. TYPE/CLASS MOORING Special Dry Dock	4.LEG NUMBER:	
INSPECTION	1	DIVERS	WATER DEFTH	ENGINEER M.M. WALTER	INITIALS

CATENARY DATA:

$$D_{\rm B} = 79.6$$
 ft

NOTES: Depths @ Mean Low Water Springs

"A" recorded in winds 10 KTS or less



COMMENTS:

CONFIGURATION, Pad Eye-To-Waterline:

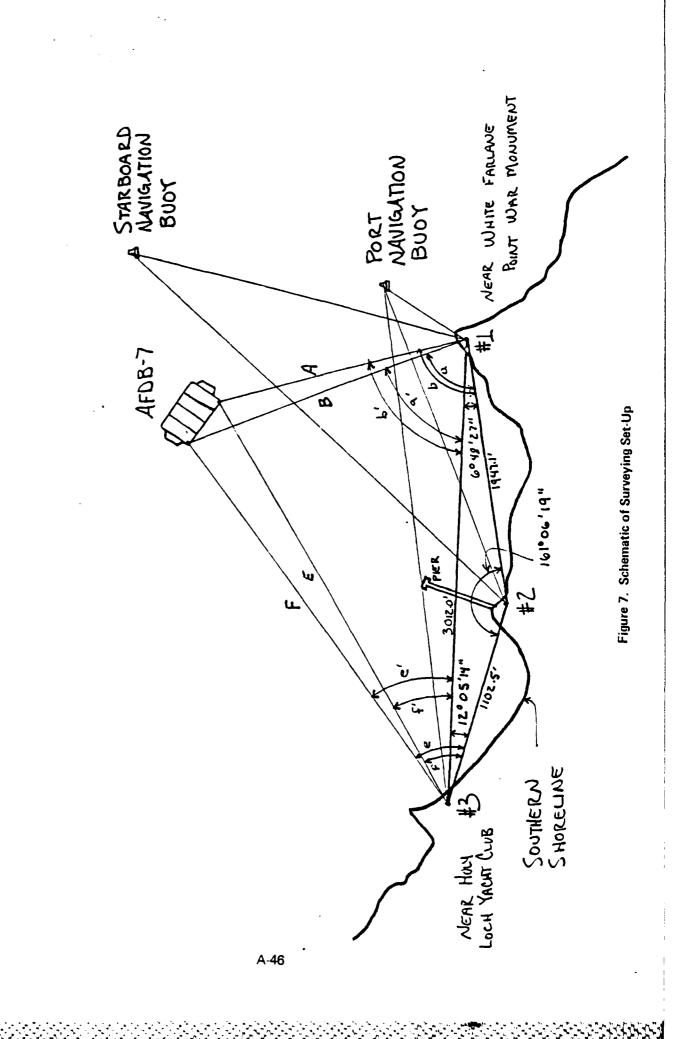
NOT OBSERVED

OTHER DATA:

Relative Bearing: OOO at deck edge

3530 deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.



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27				ज्यस्य ज्ञान	MOC	RING	INSPEC	TION	REPOR	T					}
	1. FACILITY NAVACTDET	HOLY L	осн. и		AFUL				MOORIN		LAT: LON:				
**************************************	5. INSPECTI	ON D	ATE 95008	DIVE		, ,			ER DEPT	H ENGI	NEER M. W	ALSE	1	NITIAL	5
	TIME	1035	5401	5501	0021	027/	0521	1330	00/1	1425	Opp/	1450			
33300 3330 4441	, LL	3481.60	J085. AV	.S1280C	3085.SF	3085.47	308708	28.82	108118	3086.91	3189.48 3087.08	3087.17			
	Û	1181.S	3182.09	377918	314600	3187.30	XCR.93') अध्यः।व	3189.80	3186.88	3189.66	2064.88 340.30.			
278 B	\mathcal{E}	2063.87	754.24 2066.67	178.79.2	,664.44,	.5065.30.	,5082:61,	ंग्रि.म.चट	2065.37	.50.4902	2065-61	2064.88		4-5	
	V	#/521°		, 775 : 94°	175.40	175247	,912511	1)58.02"	182511	175.76	188.88	/75F. VV"		ALCULATED	
	· ·	32.77389°	22.757.22	31.75711	32.7516.78	32.80/67°	32.796110	32.779440	32.77.189	27.727.75	31.76278°	32.7794Y"		ALC	
5500 5500	, ,	.M. (7. P.	39.611180	39.579440	39.55722"	.ક્ષારાઝ.ફર	34.56833°	39.54611	59.56278°	39.5767°	39.56132	39.551670		VALUES (ngs
	ص-ّ	\$ 134	78.951178	77.09806	79.08/340	79.08644	77.17028	79.159170	19.18/390	19.16412° 3	-21/6 1/18-	79.1128			7 Transit Readings
	ο,	82 08/10.72	7.82010.37	12.18694º 71	12.M2C0	72.13139	72.175830	71.18139° 79	72.8139"	77.181390 19	77.17583°74	N 05281.26		OTHER	AFDB-7 Tr
	ч	74,06,15.86	21 . A. OS. A.	. or . wash			21 00, 55ah			il as, asoms	21.00,13.M	22 .00,75ash	(T)	; Au	Table 3.
•".	e)	K,04,65,15		51° 40' 00" 49	51.38. 40. HOD, 10"	19.40 W	2/039 '20" 99	51. 18. 00" 4P52'00"	51039'00" 44.51'40"	86 "01 "85 NS	1.39'20" 43	10 M. 10. H	EASTERLY S-10 KTS	OBSERVED	
	۔ ہ			85°54'20" 5.	23,02,850	201, ESO.	206,3505	5,00,25	20, 10, 21	. 22, 25, 58	.54.50	25,00,00,0	19 JUNE 1982	र्ठा० र	
	. 4	78°50'28"B5"44'20"	18°52'40'8" 46'00'51"42"	8 .0h, bS. 82	78°51'00" 85°53'20'	78°56'20" 85°53'40" 51°39'40 44053'20"	18°54'00" 85°58'40'	18°54'20" 85°58'00"	18°54'20'85°59'20'	53 .07, 65,82	18084,00.88.8021.38.50.	.07, No15.00,00,98 00,00 dl	7	٤, ٥, ٢	
	reg#	1 7	2 12	3	7	5 7	91 9)	7 1	Q)	2 b	10	11	DATE (X)	ર્ડ ઇ	
		l	L		<u>\</u>		A-	47					L		
e de la companya de l	તો કહિલ્લો કરો કરે કરો કરો કરો મો										i inggan ing				

MOORING	INSPECTION	REPORT
.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		

!_	1. FACILITY 2. MOORING NO 3. TYPE/CLASS MOORING 4. LAT:															
			HOLY L	OCH, U		2. MOOF <i>AF</i> DL			EICLASS IAL D							
			l D	ATE	DIVE			<u> </u>		ER DEPTI		NEER		11	S	
5.	INSP	ECTI	ONS	1 Jun	22	-				_	M.M. WALTER					
		TIME	1215	002)	1130	0111	1055	1035	1025	0480	2460	0430	0915			
	4	L	3043.60	unsoc	30:00	3024.94	30\$3.10	30€3.11	30th 15	308504	3060.40	3078.53	82.36			
		F	3PE:94	3148.30	31857.33	2067.88 3184.85 3087.44	313460	अक.स	30 W 17 1808	82.5615	74.73/1	37.8%	14.41			;
		Σ	200665	2063.27	84.580 2083.48		24.42	8h-142/26	77. 6205	£1002	2063.15	1754.88 208413	2.2902		CALLULATED	
		T	180.85	1758:44		259521	756.31	.251/	67.2561	215217	1756.30	1754.88	89/15/1		רפחרי	
		4	32.785°	3E. 77 944º	32.74611	.68UL-25	32.7711VV°	32.71056°	32.75711	32.75833	32.79611°	32.785°	32.785			_
		e,	79.5YA56	39.52389°	39.521440	39.62446	39.54611°	34,5738°	39.55761	19.571890	39.561330	39.60167	39.57319		VALUES	ings (Con't
		۵,	79.359170	79.19250	7.06472°	79.03/39	79.02018"	78. 97.159°	78.89706°	78.81972°	-1956381	18.87583	78. 85917	KTS	OTHER ,	AFDB-7 Transit Readings (Con't.)
		٦	72.35117	.5761.22	72. IN 72°	72.08644	01900022	22.010.15	71.114720	.8702/21	15.00.26	71.936110	11.95.361	1 S-10 KTS	Ace 0	
		u		. 00.25.46	44050'00-	44 67 140"	0.75ahs	, 47, 6% o.Kh	A. O. W	44.57.20	4/1053'00"	-07,75,70	44°52'20"	ASTERLY	veo ;	Table 3.
		a	.07,750W 21.15.15.00,01098	~00.25.1h ,, 04, 950/5 ., 00,00,98 , 00, 00,066	. 18°55' 10" 85°52' 20" 51°50° 44°50' 00"	78953 40 8500 20" 5043 00" 44 67 14"	"0,750H _0,85015 "4,6408 "4,6408L	78'52'40" 85°44'20" 51° 19'40" 440 49'40"	. 4. O. 15. 15 . 17. 2h. 58.02, 55.82	78°55' 40" 85°37'20" 51°39'40" 44°57'20"	78°48'40'85°45'40'5'03'40'84'04'84'08'	.07,2501107, 16.1500, 11005804.160 BL	.07,25.06, 100, 85.015 00, 0to 58,06, 56,08L)ATE: 2L JUNE 1982 WINDS: EAST NORTHEASTERLY	OBSERVED	
		۵		., 00, 00, 98	,02.75 ₀ 58	,02,05,58	. 4, 6ho S8	85°41'20°	,02,7h058	85037'20"	. 45, 5ho 58	Rollia.	85°40'00"	21 JUNE 1982 : EAST NORTH	e, 5	
	•	ರ	79.10.00	79°00°00"	78.55 10"	78953.40	., 04, 8h. 8L	.as, 25, 82	18052 200	78°55'40"	.4,8ho81		.at, sho 81	DATE: WINDS	a, b, e, f	
		Lean	21	13	14	15	91	71	18	19	20	12	22			

					MÓC	DRING	INSPE	CTION	REPOR	T				
	FACILITY IAVACTDET	HOLY I	LOCH, U		2. MOOI	RING NO	•		MOORIN		LAT: LON:	•		
5.	INSPECTI	ou I	DATE Z JUN	921 -		,			ER DEPT	H ENG	NEER M. (L)	ALTE		INITIALS
=		Ī									,		Ī	
	Ĺ	12.8105	72.86.71	3089.47	Jost.(ot	300.49	3059.47	262.69	328464	,9Z/ ₇ 90				
	(n)	364.11	3.65.81	3167.42	315788			37.116'		20 57. 21/57.08 306/126				_
	13	Ň	.75 \$24, £061. 50.	2062.95/3167.42	2053.35 315788"	2061.083156.85	2065:50 3K1.R.	2015.87	2061.28 345.89°					CALCULATED
	A	ואצעו		175aer"	1749.43	1743.91"	115464	175156"	,1757.1	174471				- בחר
	, ,	32.84056	32.87380	32.779440	32.535°	32.735	32.86835/15468	32.746%°	32.8K/67°	32. 76218"				
	<i>و</i> -	39.84080	396350	34.78330	39.551670	39.679440	39. 768130	39.55/670	39.646 Nº	3 9.607220				V ALUE'S Jings (Con't.)
	<u>,</u>	78. 509/70	0/6928.30	1980 o	78.1701.80	78.2036P	78.4Y&6°	78.81028	78.403610	×. /3/39•				ろ に_ 〇 TAIごん VALUETS FDB-7 Transit Readings (Con't.)
	۵.	131380		7, 37583°	7073•			<u> </u>	53610					CTS Au 0 AFDB.71
	(J	.A. 55.A.	.21.19.12 "04, 15.46 "02, EHOS	44052600	YVO55 20"	_07,8KoA	02,150hb	x 10 48 . 10	-07.95.A	11695 16 .00,15ah				STERLY 35 KT OBSERVEO; A Table 3. A
	ง	. 00, 75,15	2. Thos	.07,8%.12	oh. 87 VS	.a. 4.5	-02/15015	02.55 015		oh, lhols			UE 1982	OBSER
	٩	850,1900	. sh, 11058	859/8,20"	oh, 850KB	10/1, 00, S	"62'5's %	.05, LE-58	45, 2/05	.77,95.48			,2 Ju	i EAS e, f
	. ৩	19/2 .04.55.16 .00,75.15 .00,61.5802,88.82	-07, 10-X8 -02, 52° 67	78°11'00" 8598'20" 51'48'20" 44 052600 71, 37583° 78.49860	18.07, Story "04, 87.0/5" 44, 850/8" 04, 01.87	08701616 . 07, 86066 . 00, 96 05 . 01, 00, 50, 51, 9h, 8L	78°04' 40" 85°15'20" 51'20" 44°57'20" 71.35 360	01955512 -or, Wolsh -02.55 015 -04, LEOS8 -04, 12,82	SIL -07,95, AM .00, AM .15 .4, 21059 .04, 12, BL	1802.20"			DATE 22 JUNE	WINDS: EASTERLY A, b, e, f OBSERUR
	Time	0171	, 2171	. biri	911.1	8111	, 0271	ן זננו	1724 J	9211			()	2

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ANNEX B SIXTH CLASS MOORING INSPECTION REPORTS

							MOOI	RING	INSPE	CTIO	N REP	ORT						
Į.		LITY ACTDET		LOCH	ı, UK	2.	MOORI #2	NG NO.	3. TYP Sixth			RING	4. L	AT: ON:				
5.	Ins	specti		OATE 23JU	N82	DIVER Aylst	s wonth/	Jello		WA	TER DE) "	NGIN M.M.	EER Walte	r		INITIAL	5
SEMARKS		British 3rd class buoy; excellent condition: no holes, dents, or	pitting; medium marine growth(%")	Divers unable to reach buoy topside; condition assumed sat.	Inside buoy - divers unable to measure		Located at 20' depth; condition assumed satisfactory		Located at 60' depth; condition assumed satisfactory .		Not located - chain buried							
notel	UNK	-		XXX	XXX		1 ;		-		XXX							
CONDITION (notel	+80%	-					1		1		1							t)
	+90%	-				XX D	_	a xx	ı	XX D	1							ıremen
LOCATION OF	MEASUREMENT			not measured	not measured	20' depth	not measured	60' depth	not measured	72' depth						condition.		ouble Link Measurement
SIZE		0' long		UNK.	Unk.	21,11	UNK.	2½"	UNK.	34,"	· UNK					xcellent		.; D = D
A CONTRACT C		Buoy, Cylindrical, 3rd Class		Mooring Ring	Buoy.Shackle	Riser Chain, studlink	Swivel	Riser Chain, studlink	Swivel	Riser chain, studlink	Anchor swivel and Anchor					SUMMARY: Mooring is in good-to-excellent		Note 1: S = Single Link Measurement; D = Double

eccess a someth, excuses semanates, receives travelices, respected traveless apparatus, december apparatus travels

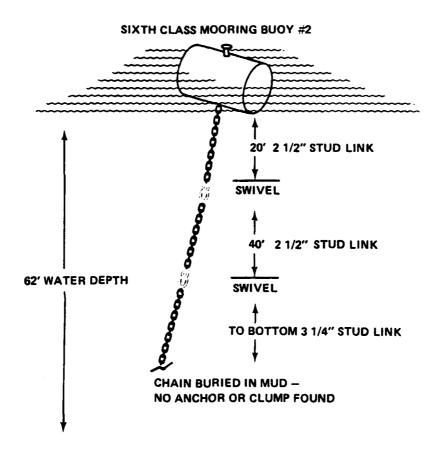


Figure 8. Sixth Class Mooring #2, Schematic

	6176	LOCATION OF	CONDI	CONDITION(note	ote][-	,	F
	371	MEASUREMENT	706+	+80%	UNK	HEMARKS		FACI NAV	
Cylindrical, 3rd Class	10' long 5' diam.		_	_	-	British 3rd Class Buoy; excellent condition - no holes, dents, or	specti	LITY ACTDET	
						pitting	Ī	HOLY	
Ring	UNK	not measured	,	-	. 1	Divers unable to reach buoy topside	OATE 23JUN	LOCH	
Shackle	UNK	not measured	-	-	l i	Inside buoy – divers unable to meas <u>ure</u>		ı. UK	
Chain, studlink	3"	5' depth	XX D				DIVER Ayls	2.	
	3"	35' depth	XX D		- 1		s worth	MOORI #3	MOOI
0 0	3,,	65' depth	XX D				/Jello	NG NO.	RING
	UNK	not measured	-	-	XXX	Not located)		INSPE
Shackle and Anchor	UNK				ххх	Not located - chain buried	J WA	E/CLAS h Cla	CTION
							TER DE 54		I REPO
							РТН	IING	DRT
							ENGIN M.M.	4. L	
							E ER Walter	AT: ON:	
SUMMARY: Mooring is in good-to-	good-to-excellent	nt condition.							
							INITIAL		
S = Single Link Measurement;	DB	Double Link Measurement	uremen	ţ			s		
								I	۱

about locationer, substitute occurrence sources projected extenses decreased because projected brokening for the

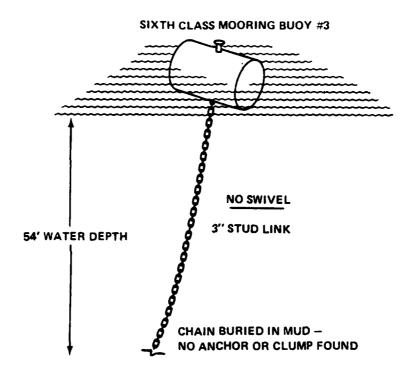


Figure 9. Sixth Class Mooring #3, Schematic

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ANNEX C NAVIGATION BUOY INSPECTION REPORTS

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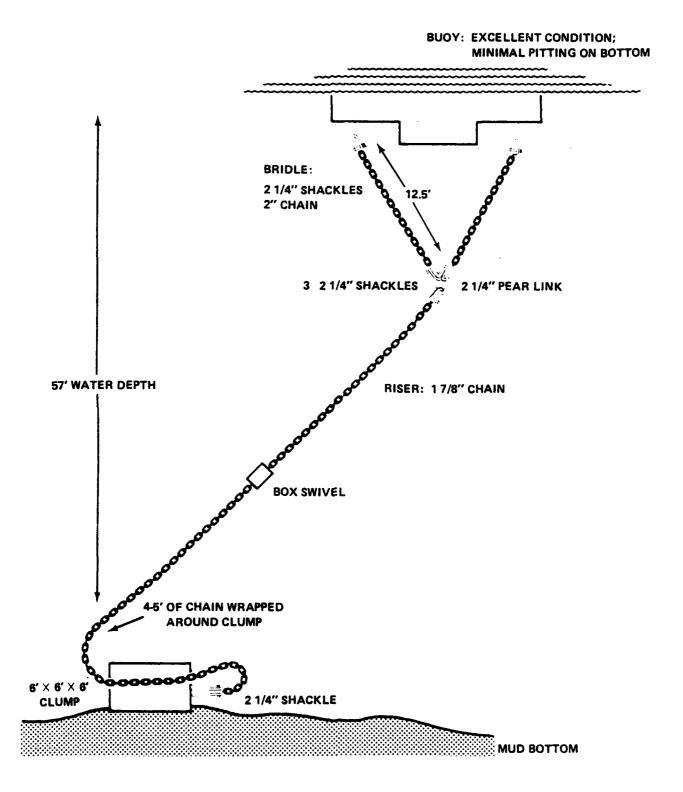
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	ľ	LOCATION OF	CONDI	CONDITION(note	tel		
IEM	SIZE	MEASUREMENT	+90%	+80%	UNK	HEMAKKS	
Marker Buoy	UNK.					Excellent condition top and bottom; minimal pitting on bottom	LITY ACTDET specti
Shackles (2)	24"	see drawing	XXX			Connect bridle to buoy	E
Bridle Chain, studlink	2"	10' depth	O XX			s of 12.	LOCH DATE 23JUI
Bridle shackles (2)	2½"	see drawing	XXX			Connect bridle to pear link	
Link	21,"	see drawing	XXX				DIVER
Shackle	2½"	see drawing	XXX		1	Connects riser to pear link	MOORII REEN CARBOA Er/Wag
Riser Chain, studlink	1 7/8"	45', 60' depths	O XX				
Swivel	UNK.	not measured	-	ı	1	Condition is assumed to be satisfactory	
Anchor Shackle	214"	see drawing	XXX				ation
Anchor, Clump Type	9x,9x,9		,	,	1	Anchor in satisfactory condition; 4-5' of chain wrapped around an-	s MOOF 1 Buoy TER DE 57
					۲	chor	,
							ENGIN
							ON:
							r
SUMMARY: Buoy is in good-to-excellent		condition. No de	design d	drawings	were	available for comparison with	
inspection data; "+90%"	is based	d on information	n supplied	ied by	E .	NAVACTDET and M.O.D.	INITIA
Note 1: S = Single Link Measurement:	"	Double Ifok Measurement	uo mo				s ·



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Figure 10. Starboard (Green) Navigation Buoy, Schematic

A							MOOI	RING	INSPE	CTION	I REP	ORT					
		LITY ACTDET	HOLY	LOCH	ı, uk		MOORI D, PO	NG NO.			s MOOF Buoy		4. L	AT: ON:			
) 5.	Ins	specti		ATE 23JUN8	32	Oliver:	s er/Wa	gner		IWA	TER DE	. 1 -	NGINE			INITIAL	S
535	REMARKS	Excellent condition top and bottom; minimal pitting on bottom	Connect bridle to buoy	Two legs of 12.5' each	Connect bridle to pear link		Connects riser to pear link		Condition is assumed to be satisfactory .		Anchor in satisfactory condition.				e available for comparison with	NAVACTDET and M.O.D.	
otel	UNK	-					į		1		ı				s were	by NAV	
CONDITION(note	+80%	1							١		1				drawings		it
CONDI	+90%		XXX	C XX	XXX	XXX	XXX	XX D	-	XXX	-				design dı	supplied	uremen
LOCATION OF	MEASUREMENT		see drawing	10' depth	see drawing	see drawing	see drawing	40', 55' depths	not measured	see drawing					condition. No des	l in information	Double Link Measurement
	3125	UNK.	2½"	2"	24"	214"	2½"	1 7/8"	UNK.	2½"	6'x6'x6				•	is based	D =
	IEM	Marker Buoy	Buoy Shackles (2)	Bridle Chain, studlink	Bridle Shackles (2)	Pear Link	Shackle	Riser Chain, studlink	Swivel	Anchor Shackle	Anchor, Clump Type				SUMMARY: Buoy is in good-to-excellent	inspection data; "+90%"	Note 1: S = Single Link Measurement;

RECERT SAMPLERS, RECORDED - RESERVORS - RESERVORS - RECORDED - RECERCOS - RECORDED - REC



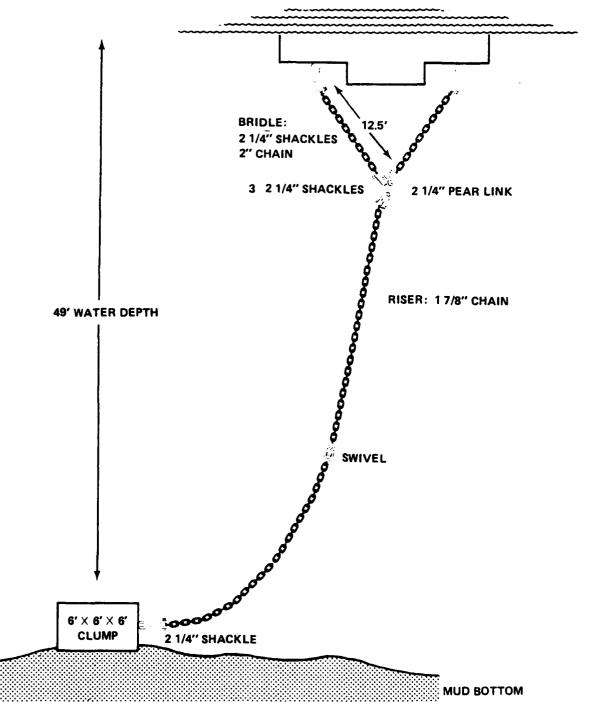
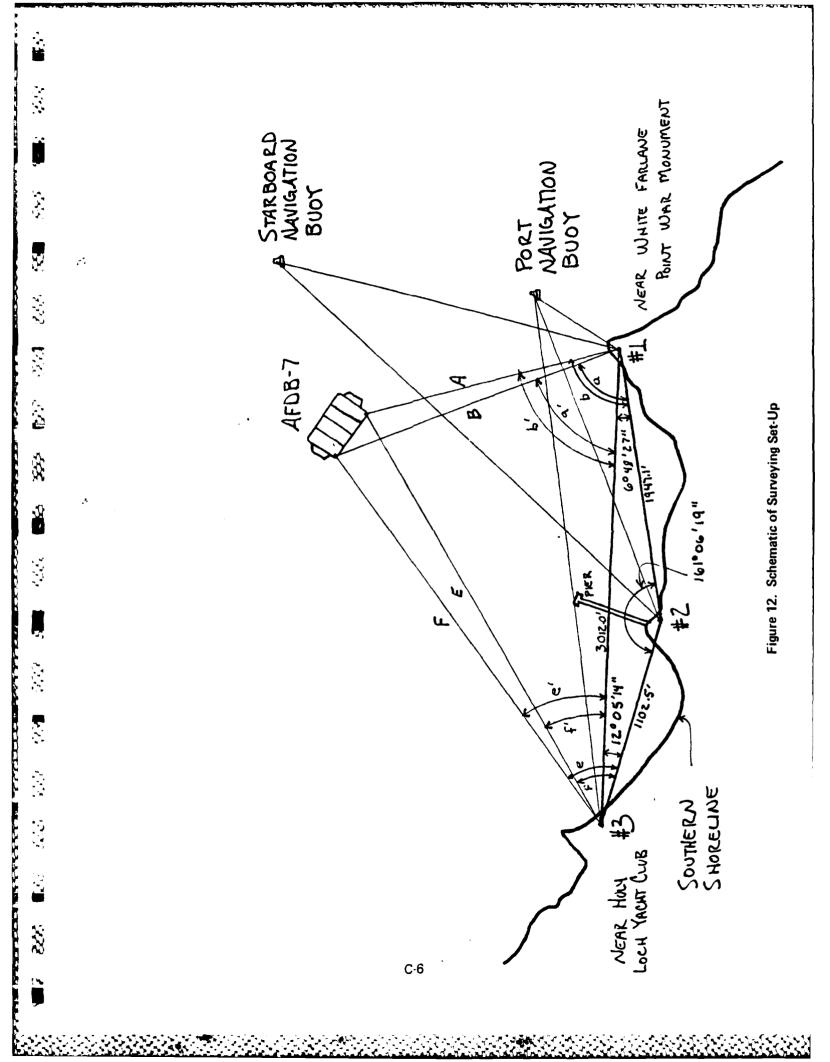


Figure 11. Port (Red) Navigation Buoy, Schematic



MOORING INSPECTION REPORT 4. LAT: LON: 1. FACILITY 2. MOORING NO 3. TYPE/CLASS MOORING NAVACTDET HOLY LOCH, UK RED&GREEN NAVIGATION BUOYS DATE DIVERS WATER DEPTH ENGINEER INITIALS 5. INSPECTION M.M. WALTER 7 Ø TIME 1200 /230 WINDS: EASTERLY 5-10 KTS To Safend NAV. Buot 148,20,00-110.33,00. 02,52,88,02,52,09 NOT VIS-. "04' 25" Red NAV. Guo Y PATE BASELINE ô 0 ဝိ X3-2 X1-2 +2 K

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ACCOUNTS ASSESSED WITH SECURIOR FOR CONTRACT CONTRACT AND

ANNEX D COSTS OF REPLACEMENT PARTS

Costs of Replacement Parts

As a result of the analysis of inspection data, it was determined that the upper two shots of chain on each leg of the AFDB-7 mooring required replacement. In addition, it was decided that 2 1/2 inch chain would be utilized pending a mooring redesign:

Estimated Costs (FY 83 Dollars)

<u>Item</u>	Size (in.)	Quantity	Unit Cost	Total Cost
Chain (90' shot)	2 1/2	44	\$6,003	\$264,132
Link, Detachable	2 1/2	49*	392	19,208
			Total	\$283,340

^{*}Includes five spares

ANNEX E CHRONOLOGY OF EVENTS

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Chronology of Significant Events

20 NOV 81	CINCUSNAVEUR requests assignment of UCT-1 for underwater inspection of Holy Loch moorings
26 MAR 82	COMCBLANT states CHESNAVFACENGCOM to provide funding and technical support for inspection
13 MAY 82	CINCUSNAVEUR expands inspection to include all 22 legs of AFDB-7 mooring
17 JUN 82	Divers and Engineer arrive on site
18 JUN 82	Set up transits; caliper measurements Section II all legs; contact with station personnel
19 JUN 82	Transit measurements; catenary data and bearing legs 12 - 22
21 JUN 82	Transit measurements; catenary data and bearing legs 1 - 11
22 JUN 82	Transit measurements; Go/No-Go and voltmeter readings on Section III all legs
23 JUN 82	Inspection of Navigation Buoys and Sixth Class moorings
24 JUN 82	Partial lift of legs #15 and #19; Go/No-Go on Section I of all legs
25 JUN 82	Debrief CO and XO of AFDB-7, and CO and PWO NAVACTDET Holy Loch
28 JUN 82	Debrief Commodore SUBRON 14 and M.O.D Representatives
8 JUL 82	Debrief NAVFACENGCOM Code PC-2
19 JUL 82	Debrief LANTNAVFACENGCOM Code 10

ANNEX F

REFERENCES

Ref. A - CINCUSNAVEUR LONDON UK 201642Z NOV 81

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- Ref. B CINCUSNAVEUR LONDON UK 130752Z MAY 82
- Ref. C COMCBLANT NORFOLK VA 261833Z MAR 82
- Ref. D CHESNAVFACENGCOM WASHINGTON DC 151407Z JUN 82
- Ref. E CHESNAVFACENGCOM WASHINGTON DC 021944Z JUN 82
- Ref. F CHESNAVFACENGCOM WASHINGTON DC 291403Z JUL 82

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COMNAVACT LONDON UK
LANTHAVFACENGOOMBRO NAPLES IT
HAVACTOET HOLY LUCH UK

BT UNCLAS //N04070//

SU J: HYDERMATER CONSTRUCTION TEAM (UTC) FYBZ WORKLOAD PLANNING FOR INSPECTION OF FLEET MODRINGS IN EURUPEAN AREA

4. CITCHSNAVEUR LONDON UK 2317232 FEB H1

1. REF DISCUSSED CINCUSNAVEUR FLEET MOURING INSPECTION REQUIREMENTS IN LA MADDALENA IT, HOLY LOCH UK, CARTAGENA SP, AND ROTA SP, AND REMUESTED UCT DNE INVOLVEMENT TO REDUCE COSTS AND MAXIMIZE INSPECTION EFFORTS. RESPONSE TO LA MADDALENA PEQUIREMENTS AND COMPLETED DURING FYRI UCT UME DEPLOYMENT, AND IS APPRECIATED. CARTAGENA REQUIPEMENTS ARE PROGRAMMED FOR FUNDING BY LANTHAMFACENGOOM FOR ACCUMPLISHMENT BY SPARTSH NAVY IN FYRP, AND LANTHAMFACENGOOM WILL SEEK FURTHER FUNDING FOR ACCUMPLISHMENT OF ROTA REQUIREMENTS BY CONTRACT.

ACCUMPLISHMENT OF ROTA REQUIREMENTS BY CONTRACT.

ACCURDINGLY, MANACTOET HOLY LOCH FYRI INSPECTIONS IDENTIFIED IN REF ACREMAIN THE DRLY UCT MORKLOAD REQUIREMENTS IN MAYEUR AREA FOR FYRE.

2. LANTHAVFACENGODM HAS ADVISED RESOURCES WILL BE MIDE MVAILABLE FOR HOLY LOCH INSPECTIONS, AND LANTHAVFACENGODM WILL COUNTYNATE WITH CHERNAVFACENGODM AND UCT THE REGARDING DETAILED LOCITIAN BE LUGISTICS. DUE TO LIMITED MEATHER ATHROW PREFER INSPECTION BE SCHEDULED FOR APPROX THREE MEEK PERIOD MAY - JUL 82. DECISION ON UCT ONE ASSIGNMENT IS DESIRED SOONEST IN OPDER THAT MINISTRY OF DEFENSE UK CAN BE INFORMED OF INSPECTION MORK APPROVED FOR ACCOMPLISHMENT BY U.S. MANY FORCES, AND THUS LIMIT MOD PLANNED

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BERTTCIPATION TO CHANGING/MAINTAINTES MUDRINGS/BUUYS. IF UCT ONE ASSIGNMENTS ARE NOT APPROVED, INDRECTIONS ABULD HAVE TO BE INCLUDED (AT IMCPEASED COST) IN REBUEST TO MOD UK.

3. REQUEST APPROVAL FOR UCTIONE ASSIGNMENT FOR HOLY LOCH MODRING TOSPECTION. BT

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INFO LANTHAVFACENGCOM NORFOLK VA

CHESNAVFACENGCOM WASHINGTON DC UCT ONE

UNCLAS //R11000//

SUBJ: FLEET MOURING MAINTENANCE AND UNDERWATER CONSTRUCTION TEAM (UCT) "ORKLOAD PLANNING"

A. FUNECUM MR. P. TARP, LANTHAVFACENGCOM/CDP H.B. LEMON, CINCUSNAVEUR, CODE M452, 10 MAY RE

B. CINCUSHAVEUR LONDON UK 2617222 FEB 82 (NOTAL)

. COMCBLANT, NURFOLK VA 261822Z MAR 82 (NOTAL)

1. IN REF A, LANTHAVEACENGOD PROVIDED TECHNICAL RECOMMENDATION TO MODIFY SCOPE OF OCT MURKLOAD AT HOLY LOCH, WHICH WAS SUBMITTED IN REF 8 AND SCHEDULED FOR MAY/JUNE 82 IN REF C, TO INSPECT ALL 22, MOORING LEGS FOR AFOB 7 (FLOATING DRY DUCK). THIS SCOPE THEASE WAS REQUESTED IN ORDER: TO CHECK AND ASSURE THAT COMDITION AND LENGTH OF CATENARY OF THE MODRING LEGS ARE SATISFACTORY. IT WAS ESTIMATED THAT THIS ADDITIONAL WORK SCOPE WILL REQUIRE OCT CHE SCHEDULING FOR THREE TO FOUR WEEKS, VIGE TWO WEEKS

2. REQUEST THAT THIS REVISED WORKLOAD BE INCLUDED IN THE TASKING OF UCT UNE, AND THAT THE DURATION OF UCT ONE VISIT TO HOLY LUCH BE EXTENDED, ACCORDINGLY, AS REQUIRED. BT

COLUR: CHESNAVFACENGOOM WASHINGTON DC(8)...INFO

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ROUTINE

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TO CINCUSHAVEUR LUMDON UK

INFO CINCLARTFUT NORFOLK VA NAVACIDET HULY LOCH UK CHESNAVFACENGCOM WASHINGTON DC

LANTHAVFACENGCOM, MORFOLK VA COMNAVFACENGCOM ALEXANDRIA VA NAVSUPPO LA MADDALENA IT

BT UNCLAS //MI1000//

SUBJ: FLEET MOORING MAINTENANCE AND UNDERWATER CONSTRUCTION TEAM (UCT) WURKLUAD PLANNING

il establication of the control of the control of the british of the tentral of the control of t

B. FUNECON RETWEEN LCDR WAGNER (UCT UNE) AND LCDR BERRY (NSO LA MADDALENA) OF 25 MAR 82

1. UCT OUF IS PRESENTLY SCHEDULED TO PERFORM FLEET MOCKING INSPECTION AT NAVOET HULY LOCH UK IN MAY/JUN 1982 TIMEFRAME AS REQUESTED
PER PEF A. FUNDING AND TECHNICAL DIRECTION TO BE PROVIDED BY.
CHESNAVFACENGOOM (FPO-1)/UCEAN ENGINEERING AND CONSTRUCTION PROJECT
OFFICE.

2. COMFIRMING REF 6, THE PIER PORTION OF PROJECT CT-81 (CONSTRUCT MARINA PIER) AT MAVSUPPO LA MADDALENA, ITALY, ALSO REGUESTED BY REF A CAN RE (FRITATIVELY SCHEUNLED FOR UCT ONE ACCOMPLISHMENT IN FY 83 PENDING COMPLETED DESIGN AND FUNDING AVAILABILITY. PEGRET EARLIER START NUT PRACTICAL DUE TO OTHER COMMITMENTS. REG ADVISE ACCERTABILITY OF THIS TIMING.

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UCT ONE

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SUBJ: HULY LOCH FLEET MODRING INSPECTION

A. CIRCUS AVEUR LONDON ON 2017222 FEB 82

B. COMBLAST MORFOLK VA 2519332 MAR 82

C. CINCUS MAVEUR LUNDON UK 450752Z MAY 82 KOTAL

D. CORBLANT MORPHLE VA 141723Z FAY BZ MOTAL

E. LANTHANFACERGOOM MORFOLK VA 191740Z MAY 82

1. REF A IDENTIFIED REQUIREMENTS TO TASPECT CERTAIN FLEET MOORINGS AT HOLY LUCH, SCOTLAND. REF B REQUESTED CHESMAVEACENGON TO PROVIDE FUNDING AND TECHNICAL ASSISTANCE TO UCT ONE FOR THE INSPECTION. CHESNAVEACENGUM FUNDING TO BE PROVIDED UNDER MAVEAC SPONSORED FLEET MODRING MAINTENANCE (FMM) PROGRAM. REFS C AND D EXTENDED THE INSPECTIO. TO INCLUDE ALL 22 MOGRING LEGS OF AFDR 7. REF E FRATHER REQUESTED CHESNAVEACENGON TO TAKE FOR ACTION THE FUNDING OF THE EXPANDED INSPECTION EFFORT.

2. AS REQUESTED AND IAW REQUIREMENTS PROVIDED BY OCT ONE AND CRITEFIA FOR USE OF FMM FUNDING PROVIDED BY COMNAVEACENGEOM CODE 10. THE FOLLOWING PLAN OF ACTION HAS BEEN DEVELOPED FOR INSPECTING THE MOORINGS OF AFOR 7:

A. FUNDING HAS SEEN PROVIDED TO UCT ONE FROM THE MAYRAC

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SPOUSDRET F Y PROGRAM.

- H. A PROJECT EXECUTION PLAN HAS HEER COMPLETED AND FORMARDED TO UCL ONE FOR APPROVAL AND EXECUTION.
- C. A CHESHAVEACENGOUM ENGINEER WILL ACCUMPANY NOT DRE TU HOLY LOCK TO ASSIST IN TAKING AND RECORDING DATA AND TO PROVIDE TECHNICAL ASSISTANCE.
 - D. MOUPING LEGS TO HE TASPECTED ARE AS FOLLOWS:
 - (1) ALL 22 LEGS OF THE AFRE-7 DRYCOCK MOURING
 - (2) Win. 2 ARD AD. 3 off CLASS ROURINGS
 - (3) PORT AND STARROARD NAVIGATION BOUYS
- E. THERE WILL BE NO ATTEMPT TO INSPECT MOURING LEGS BELOW THE MODELINE AS ANY ATTEMPT TO HAISE CHAT ABOVOR ANCHORS WILL DISTRUBE THE EXISTING MOGRING COMPIGNATION, FUTRUD MAINTENANCE WORK SHOULD INCOMPORATE PAISING AND MISUAL INSPECTION OF THESE PORTIONS OF THE MOOKING LEGS.
- F. THE PROJECT IS COMETCING 1A JUN 82 AND FILL REQUIRE 3-4 AEEKS FOR COMPLETION.
- G. REVIEW AND/OR ANALYSES OF THE EXISTING OR FUTURE AFOR THOUGHTO DESIGN IS NOT VITHIM THE FUMBING AVAILABLE OR SCOPE OF THIS PROJECT.
- H. AP INSPECTION REPORT FILL BE MAILED TO ALCOY APPROXIMATELY A LEGGS AFTER COMPLETION OF THE IMPRECTION.
- 3. CHESWAVEACENGOOM POO REGARDING THIS PROJECT IS MR. A. KURTZ AT AV 288-3861. HT

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BT UNCLAS //N07300//

SUBJ: NAVCUMPT FURM 2275, NO.N62477-82-WR-02625

- 1. IAW MIG STWN ANDY KURTZ (CHESDIV) AND LCDR BRANDENBURG (UCT-1) OF 25 MAY 1982, NAVCOMPT 2275, NUKK REQUEST DUCUMENT N624/732 WR02625 IS MEREBY ISSUED IN THE AMT UP \$30,000 FOR THE FLEET MOURTING INSPECTION OF THE AFDB-7, TWO 6TH CLASS MOURINGS, AND TWO NAVIGATION HUDYS IN HOLY LUCH. ACCOUNTING DATA IS AA 1721804.K7KT/000/62477/0/062477/20/000000/62202FHR2625. FUNUS EXPIRE 30 SEP 82. MAXIMUM AUTHORIZED IS \$30,000.
- 2. IMMEDIATE OBLIGATION AUTHURIZED. CUNFIRMING DOCUMENT FULLOWS. REQUEST MSG ACCEPTANCE.
- 3. PUC CHESDIV IS M.M. WALTER FPU-1FP(PDC), AU10VUR 288-3881.

DLVR: CHESHAVFACENGOUM WASHINGTON UCCSJ... URIG

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TO CINCUSNAVEUR LONDON UK

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NAVACTDET HOLY LOCH UK

UCT ONE

CTVENGRUAE PORT HUENEME CA

UZZ HUNLEY

UNCLAS //Nll000//

SUBJ: HOLY LOCH FLEET MOORING INSPECTION

- COMCBLANT NORFOLK VA 2516332 MAR 62
- CHESNAVFACENGEOM WASHINGTON DC 1514072 JUN 82 Б.
- MTG ETWN LANTNAVFACENGCOM AND CHEZNAVFACENGCOM IF JUL 53 (.
- IAW REF {A}, CHESNAVFACENGCOM PROVIDED FUNDING AND TECHNICAL

ASSISTANCE TO UCT ONE FOR THE UNDERWATER INSPECTION OF SELECTED

MOORINGS AT HOLY LOCH, SCOTLAND. REF (B) PROVIDED A PLAN OF ACTION

FOR INSPECTING THESE MOORINGS. THIS IS A PRELIMINIARY REPORT OF THE

INSPECTION FINDINGS.

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SHILL NAMED TOOL OFFICE EXPERT LANCE FROME

2. THE INSPECTION WAS CONDUCTED DURING 17-25 JUN 62. SIGNIFICANT

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M. WALTER

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AD-A166 643 HOLY LOCH FLEET MOORINGS INSPECTION REPORT(U) NAVAL FACILITIES ENGINEERING COMMAND MASHINGTON DC CHESAPERKE DIV 15 OCT 82 CHES/NAVFAC-FPO-1-82(22)

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NATIONAL BUREAU OF STANDARDS - 1963 - A

FINIINGS EDUGERNING EACH MOORING ARE AS FOLLOWS:

- A. STBDONAV BUOY AND PORT NAV BUOY: BUOYS, RISER CHAIN AND ANCHOR CLUMPS APPEAR TO BE IN GOOD CONDITION.
- B. TWO LTH CLASS MOORINGS: BUOYS AND RISER CHAIN APPEAR TO BE IN GOOD CONDITION; ANCHORS BURIED IN MUD.
 - C. AFDB-7: ALL 22 LEGS INSPECTED.
- 113 ON LEG NO. 22, LESS THAN 80 PER CENT ORIGINAL WIRE DIAMETER REMAINING.
 - 12) NO BROKEN CHAIN LINKS OBSERVED.
 - {3} ALL ANCHORS APPEAR TO BE BURIED IN MUD.
- [4] LEGS NOS. 3, 5, AND 19 OBSERVED WITH SLACK CHAIN ON BOTTOM.
- (5) SIXTY FOUR PER CENT OF LEGS HAVE READINGS OF 80-90 PER CENT ORIGINAL WIRE DIAMETER REMAINING.
- (b) THIRTY SIX PER CENT OF LEGS APPEAR TO HAVE LITTLE OR NO CATENARY.
- 3. AS DISCUSSED DURING REF {C}, CEL IS PROVIDING INPUT TO LANTNAVFACENGCOM CONCERNING CATENARY ADJUSTMENTS. THIS REPORT SHOULD BE
 COMPLETED IN APPROXIMATELY SIX WEEKS. ALSO DISCUSSED DURING REF {C},
 CHESDIV RECOMMENDS THE FOLLOWING ACTIONS:

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View of AFDB-7 and U.S.S. HUNLEY, looking north from White Farlane Point.



On-deck arrangement of anchor leg, showing pad-eye, anchor joining link (red), and stud-link chain.



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Using inclinometer to measure angle of anchor leg.



Double-link wire diameter measurement, using pre-cut "Go/No-Go" gauge.



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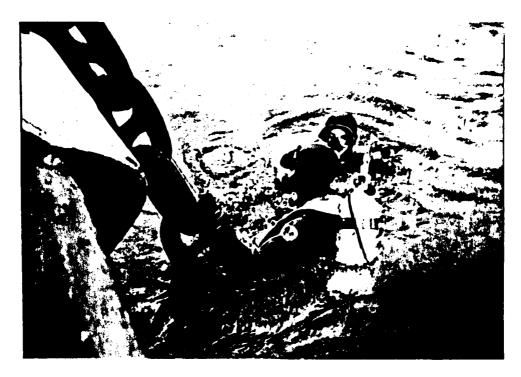
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Chain in Section II of Leg 21; although this chain is rusty and flaking, the double-link measurement was over 90% throughout.



Chain in very good condition, showing light rusting and some marine growth near the waterline.



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Divers from UCT-1 after conducting underwater inspection.

Contract Contracts

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